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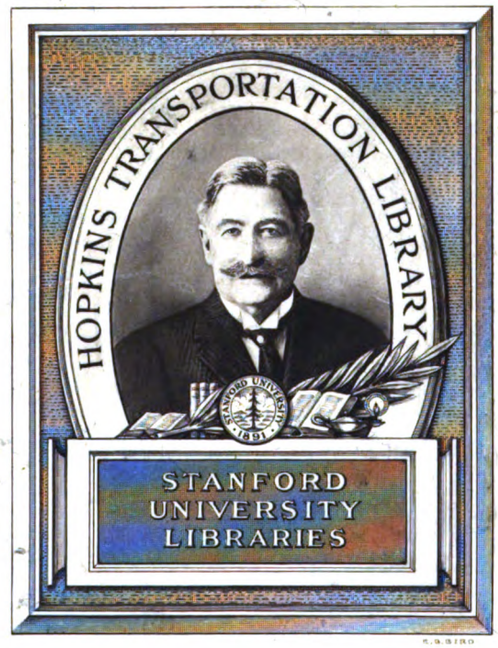

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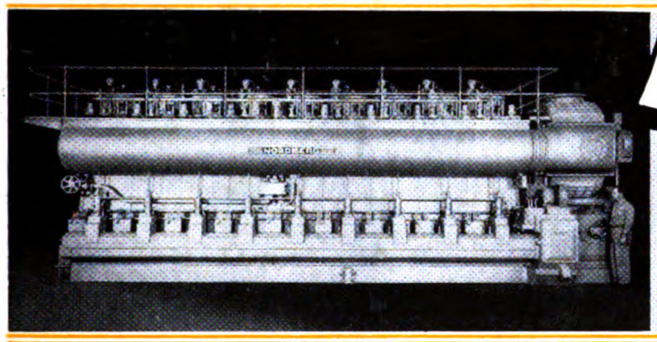
the LOG

DEPENDABLE POWER

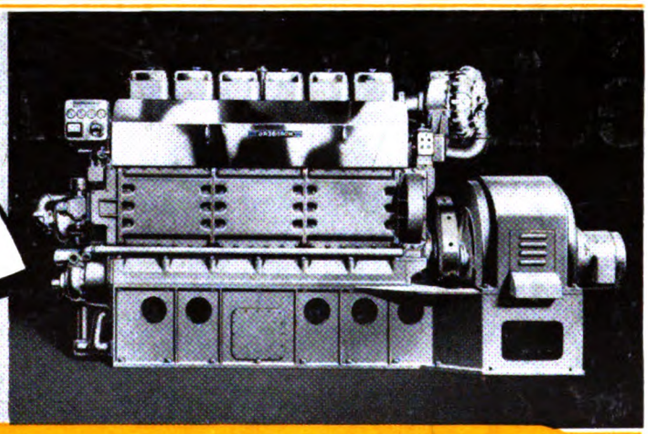
- For Ship Propulsion
- For Auxiliary Service



Built in various types and sizes to meet all marine applications.

TWO-CYCLE

FOUR-CYCLE



See Page 3

NORDBERG
DIESEL ENGINES

JANUARY 1948
Volume 43 • Number 1

EDITORIAL INDEX ON PAGE....23
ADVERTISERS' INDEX ON PAGE 84

PAC ON

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THE LOG OF AMERICAN

Transportation ~ Subscription

1 Specialized Service

AT EVERY MAJOR PORT

ENTER any principal world harbor! . . . You'll find the same high-quality Gargoyle Marine Oils and Engineering Service!

Even before you dock, the resident Gargoyle Marine Representative knows your ship's current operating history, its lubrication service at the last port of call.

And he's prepared to give expert, immediate service with *correct* marine lubrication.

Insist on Gargoyle Marine Oils!

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and Affiliates: MAGNOLIA PETROLEUM CO.
GENERAL PETROLEUM CORPORATION

GARGOYLE
Marine Oils

GARGOYLE

MARINE OILS AND ENGINEERING SERVICE

The LOG, published monthly, semi-monthly in July, by MILLER FREEMAN PUBLICATIONS OF CALIFORNIA, 124 West Fourth Street, Los Angeles 13, California, on the 25th of each preceding month. Executive, Advertising and Editorial Offices, 121 Second Street, San Francisco 5, California. Subscription (including Yearbook Number) in United States, $2.00 per year or $5.00 for three years; Foreign $4.00 per year. 25c per copy. Yearbook, $1.00 single copy. Entered as second-class matter February 5, 1916, at the post office Los Angeles, California, under act of March 3, 1879. Postmaster: Please send Notice 3578 to The LOG, 121 Second Street, San Francisco 5.

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United's Facilities Include

2 FLOATING DRYDOCKS
10,000 AND 14,000 TONS

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DRYDOCKING
SHIP REPAIRS
CONVERSION

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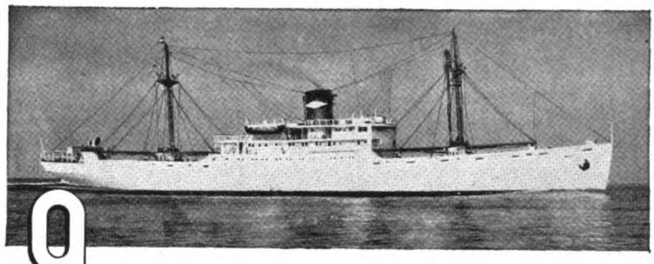
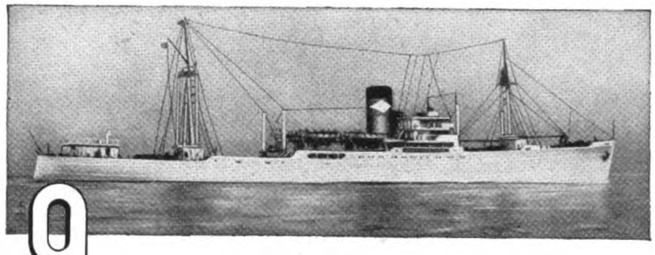
QUESTION:

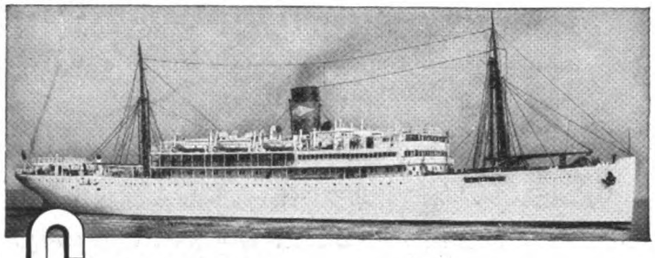
What is as NEW as Today ... yet nearly a half century old?



9 **S.S. YAQUE**—one of nine sister ships in a current shipbuilding program, all but one of which have been launched. All are 16 knot vessels of 9,338 tons displacement, 385'11½" long, with refrigerated cargo space of approximately 197,000 cubic feet. Each will have accommodations for twelve passengers and carry a crew of 48.



9 **S.S. BERLANGA**—one of nine newly built sister ships—all now in operation. Larger than the "Yaque" class, these vessels are 455'5" long, with 12,890 tons displacement and refrigerated cargo capacity of approximately 318,000 cubic feet. They are 18.5 knot vessels carrying twelve passengers.



6 **S.S. ANTIGUA**— one of our six famous cargo-passenger liners. All fortunately survived war duty and reconversion to their former luxury has been completed on all but one. Four are now in Caribbean cruise service out of New Orleans. Our 1948 program provides for three of these liners in weekly cruise service out of both New York and New Orleans, beginning in January. These ships have first class accommodation for 99 passengers each. All rooms face the sea. Each ship has a permanent outdoor pool, spacious promenades and public rooms.

ANSWER: the Great White Fleet—which has served trade and travel with Middle America for 48 years, meeting constantly expanding transportation needs with new ships and new services. The fleet greets today's demands with fast, modern vessels—a majority of them newbuilt or completely reconverted.

GREAT WHITE FLEET

Serving ...

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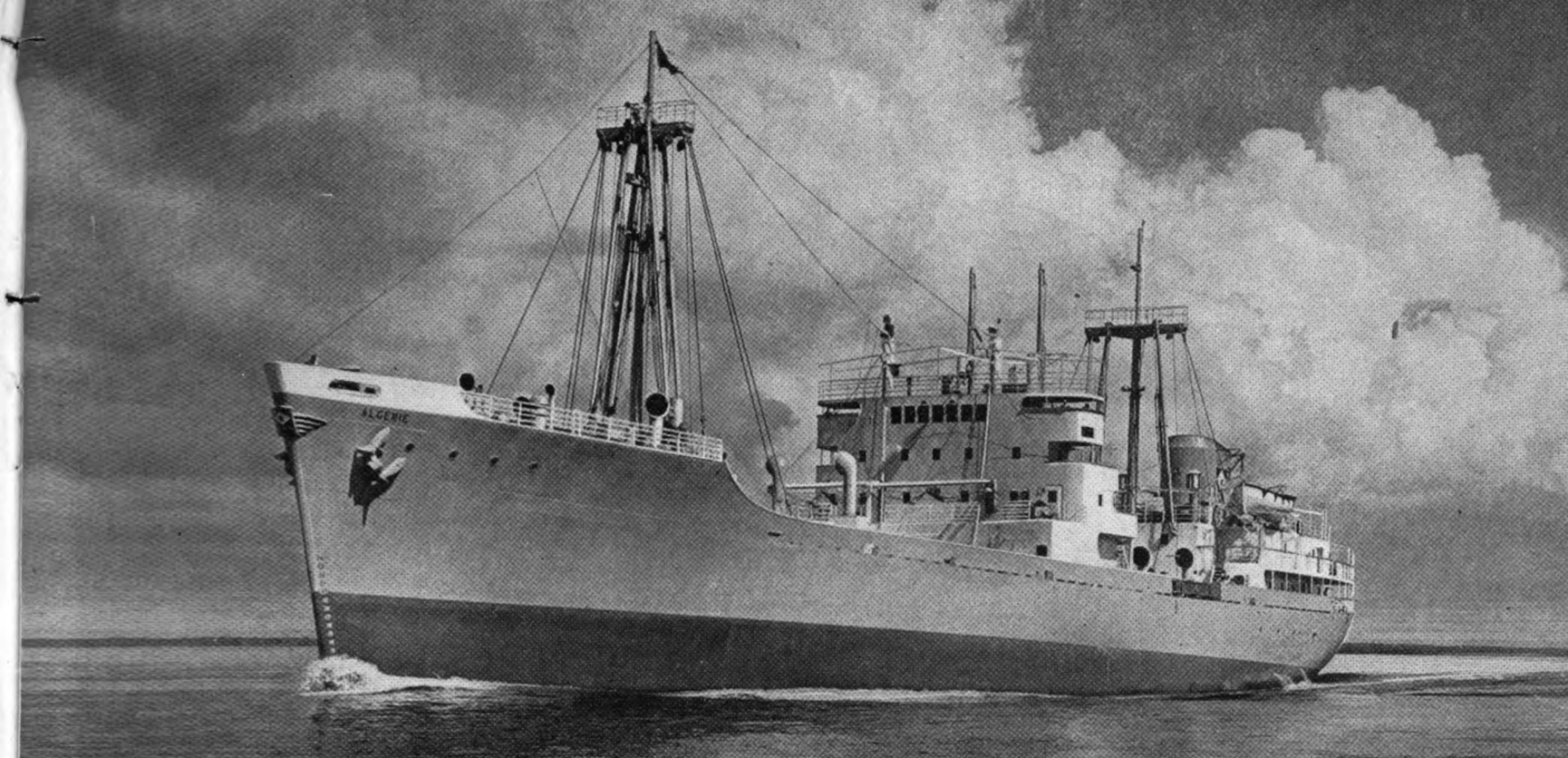

NORDBERG DIESELS

propel Six New French Motorships

SEVEN THOUSAND TWO HUNDRED is a lot of horsepower to pack in so small a space as is done on six of these 3770 deadweight ton, 18 knot motorships used for carrying fruit and grain from North Africa to France. In each vessel there are six 1200 horsepower, four-cycle, supercharged Nordberg Diesels arranged in two groups of three each which drive the twin screws through electric couplings and gear sets. Here again Nordberg Diesels have been selected to meet an unusual power requirement.

NORDBERG MFG. COMPANY
Milwaukee 7, Wis.

BUSCH-SULZER

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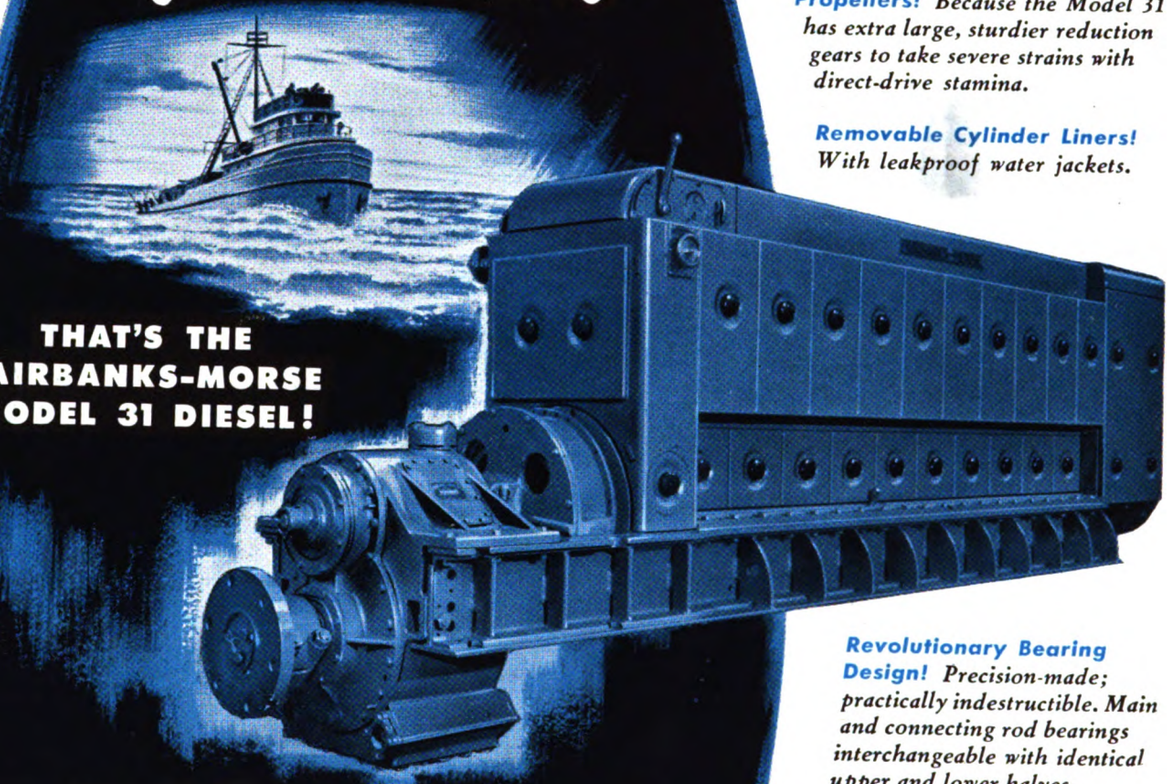
"Water-born"



THAT'S THE FAIRBANKS-MORSE MODEL 31 DIESEL!

Born and built for propulsion or marine generating service—that's this Model 31! Here's one Diesel that speaks a mariner's language, with sea-going advantages that show up in fast, low-cost hauls of those heavy loads . . . in quick, positive starting and responsive controls that mean swift maneuvering when it's needed most! Here's power aplenty for screw, winch, pumps and other auxiliaries.

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A name worth remembering

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Larger, More Efficient Propellers! *Because the Model 31 has extra large, sturdier reduction gears to take severe strains with direct-drive stamina.*

Removable Cylinder Liners! *With leakproof water jackets.*

Revolutionary Bearing Design! *Precision-made; practically indestructible. Main and connecting rod bearings interchangeable with identical upper and lower halves.*

Simplified Control! *Direct-reversing; pneumatic finger-tip remote controls to sailing clutches and forward-end power take-offs.*

Cool Running! *Pistons, heads, ring sections and skirts—are oil-cooled.*

Full Pressure Lubrication *to all moving parts!*

Horsepower Ranges *from 175 to 480: Available with all required power auxiliaries.*

Service Facilities *through widespread Fairbanks-Morse service organization.*

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New Mariner's Pathfinder* 3cm Radar gives you

BEAM WIDTH of 1.1°
MINIMUM RANGE of 80 yards
A DEFINITION never before obtainable in commercial radar!

Vessel downbound in the Detroit River using two mile range, relative presentation and center expansion. The Ambassador Bridge and its approaches are clearly shown one-half mile ahead.

Specifically designed for use in the Great Lakes rivers and in restricted waterways, the New Mariners Pathfinder 3 cm (x-band) radar provides unusually high resolution so necessary for piloting in treacherous rivers and inland waterways. So high is the bearing resolution, 1½°, that two standard navigational buoys only two hundred feet apart are seen as separate targets at distances as great as one mile. In addition, minimum range is 80 yards or less . . . vitally important in close harbor navigation.

The New Mariners Pathfinder 3 cm Radar gives you these important advantages—Six range scales: 1, 2, 4, 8, 20 and 40 miles . . . minimum range 80 yards or less . . . variable ranging mark and counter for accurate ranging . . . a flip of a switch provides center expansion.

Like the world famous 10 cm (s-band) Mariners Pathfinder Radar, the new 3 cm unit reflects the accumulated experience of years of know-how of both the Submarine Signal Company and Raytheon Manufacturing Company . . . know-how that disclosed the *world's first complete radar system.*

Find out how your ships can get greater safety, and maintain faster regular schedules with Mariners Pathfinder 3 cm Radar for inland waterways or 10 cm for oceanways. Write for complete information, today.

*Trade Mark

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They'll pay out and heave in the anchors, quickly and smoothly on the newest American President luxury liner . . . the 23,000-ton PRESIDENT CLEVELAND. Combined with this ease of handling, these anchor chains will give maximum protection to ship, passengers and cargo.

That's because the owners have entrusted the job to NACO Cast Steel Anchor Chain . . . the chain with every link in the shot CAST to the adjoining links—without a weld in its length. NACO Chain is safe and sure against service fatigue.

Every ship master wants this kind of protection . . . with fast, smooth handling of his anchors. Give it to him, with NACO Anchor Chain.

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

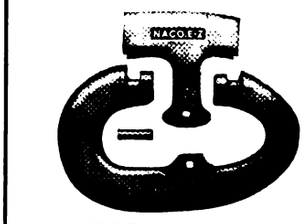
Cleveland, Ohio

Pacific Coast Representative

C. J. Hendry Company, 27 Main Street, San Francisco 6, Calif.

NACO ANCHOR CHAIN

TRADE MARK



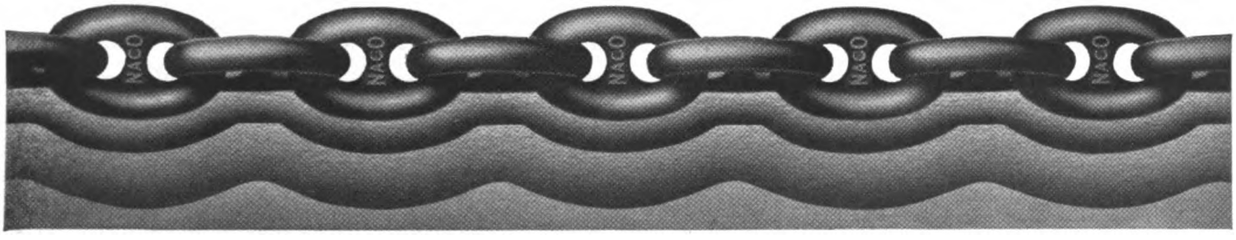
NACO E-Z Anchor Joining Link

NACO Chain Joining Link

Made of the same steel as NACO Chain, of similar size and shape to the chain with which they are used. NACO links are safe, sure, fast and easy to handle. Specify NACO links for every anchor chain.

M&S Co.

ESTAB. 1868



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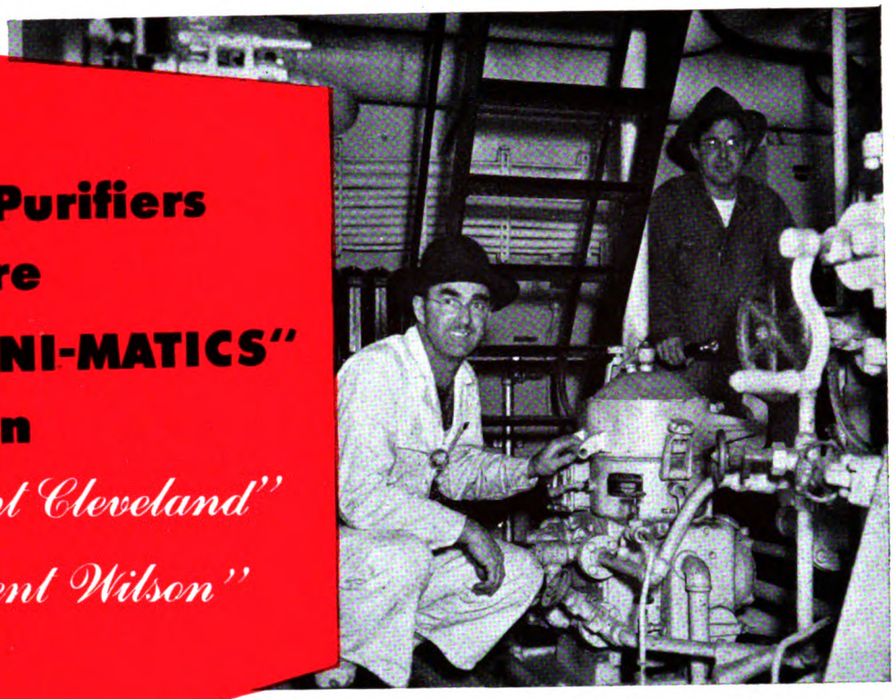
The Oil Purifiers are De Laval "UNI-MATICS" on

The "President Cleveland"

The "President Wilson"



JACK L. PATON, "Chief" of the *President Wilson* and FRED JENNINGS, "Chief" of the *President Cleveland* inspect one of their De Laval Oil Purifiers.

THE turbines of these two important vessels are protected by De Laval Oil Purifiers. These Oil Purifiers remove from the lubricating oil ***both*** of the impurities that cause contamination — ***dirt*** and ***water.***

De Laval machines remove these impurities by centrifugal force, discharging any water present to waste and maintaining the oil in "like new" condition. It matters not whether the quantity of water in the oil is a few drops of condensate or a barrel-full — the De Laval will separate out either — instantly.

Such positive dehydration minimizes sludge formation, and helps keep the turbines free of trouble.

Protection from dirt is equally positive. A De Laval machine of proper capacity, operated on continuous by-pass, will purify the oil in circulation three to four times daily, insuring against excessive bearing wear.

DE LAVAL

Lubricating Oil Purifiers

THE DE LAVAL SEPARATOR COMPANY
165 Broadway, N. Y. 6 427 Randolph St., Chicago 6

DE LAVAL PACIFIC COMPANY
61 Beale St., San Francisco 5

THE DE LAVAL COMPANY, Limited
Peterborough, Ont.

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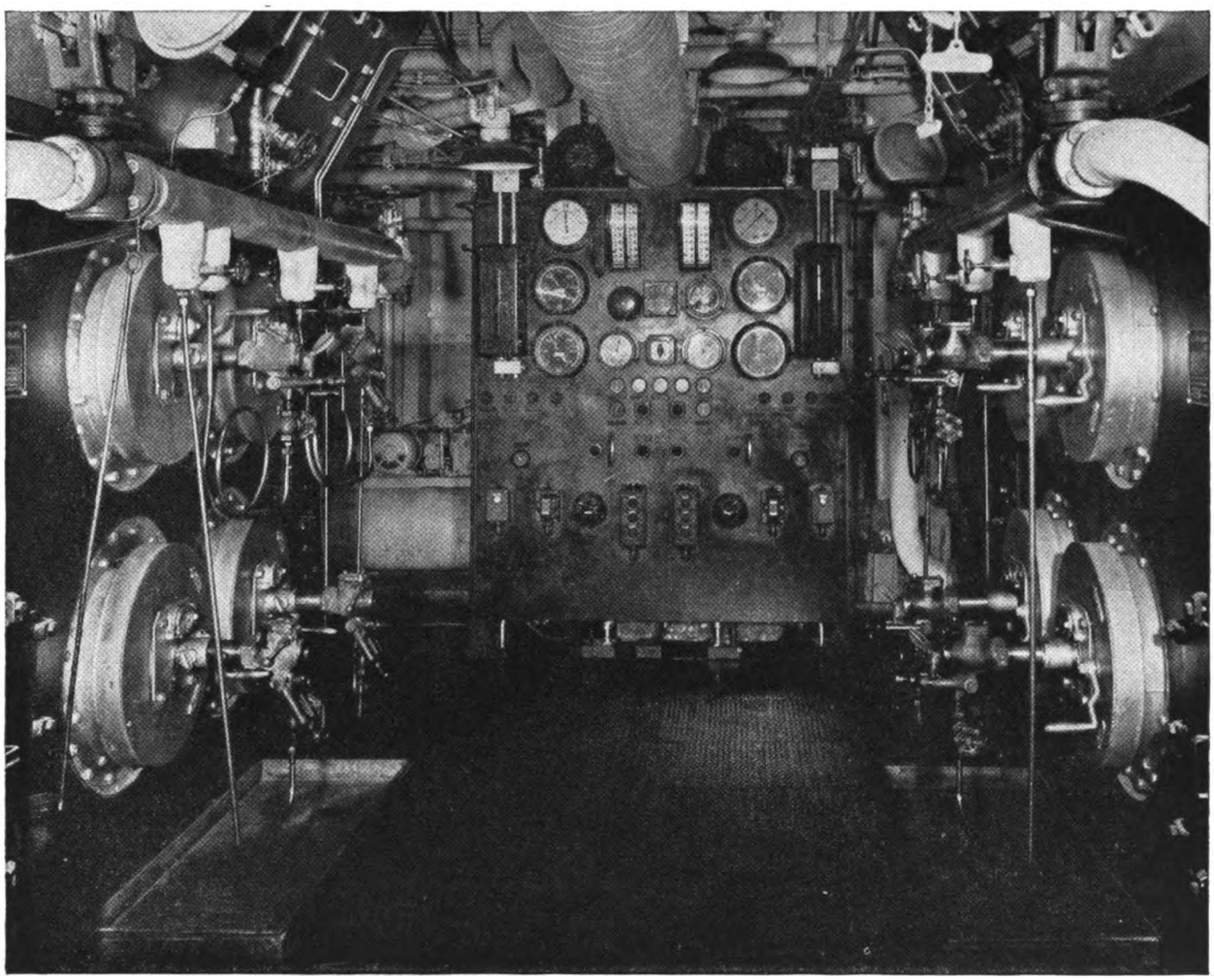
The SS President Cleveland is equipped with HAGAN automatic combustion control



For full information concerning this fuel-saving control in new construction or in Liberty or Victory ships, write to

HAGAN CORPORATION

HAGAN BUILDING, PITTSBURGH 30, PA.

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FROZEN MILK CUBES to the ORIENT?

It's no Trick at All— With American President's Controlled Refrigeration

Fresh, pure American milk is now available in far off China and the Philippines—thanks to American President Lines new Separate Compartment Stabilized Temperature Control facilities. This remarkable refrigerator service (controlled temperature at any point from minus 10° to plus 55°) is bringing about a major change in the food habits of the peoples of the Far East *and* is opening up vast new markets to American industry.

For further information about this interesting feature of American President Cargoliners as well as their many other cargo safeguards, call our nearest office.

★ SPEED ★ REGULARITY
★ FREQUENCY ★ DEPENDABILITY

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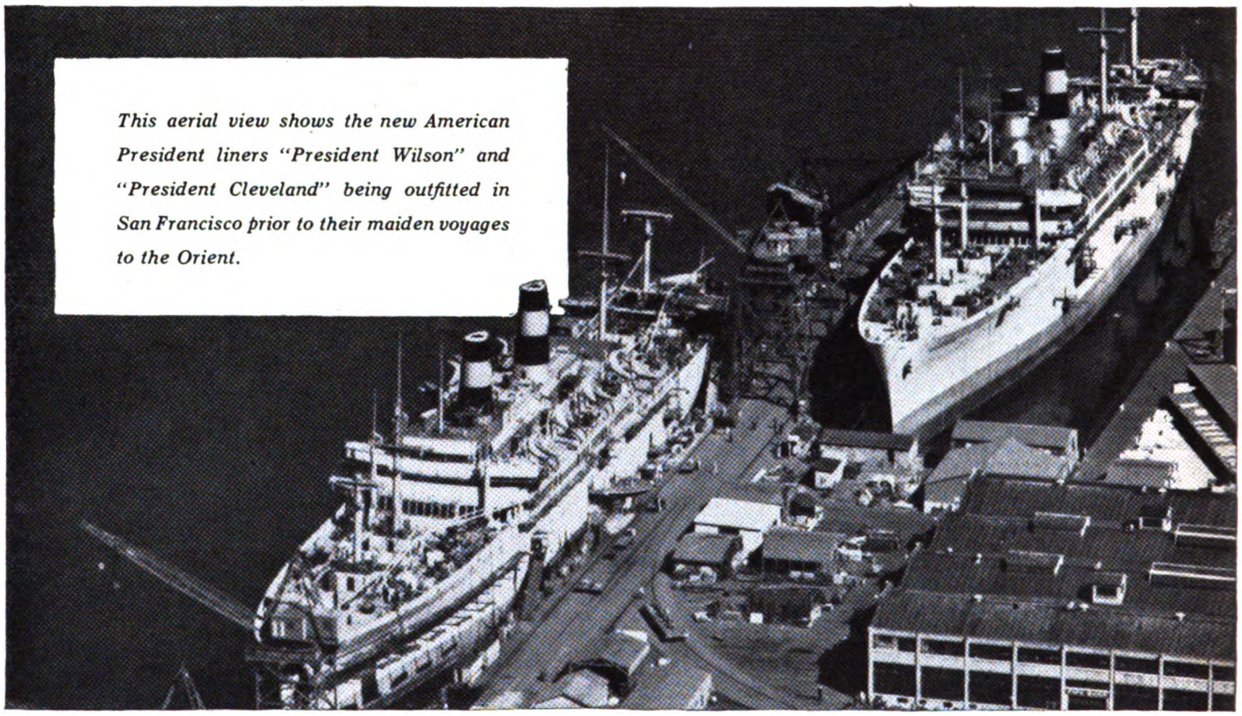
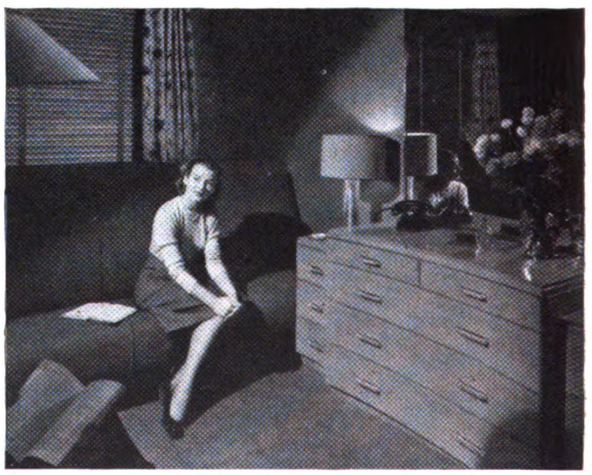
BIGGEST POSTWAR

USE G-E TURBINES



This aerial view shows the new American President liners "President Wilson" and "President Cleveland" being outfitted in San Francisco prior to their maiden voyages to the Orient.

The smooth lines of the "President Cleveland" make her an outstanding addition to the Pacific passenger service. Cruising speed is 19 knots.



Passenger accommodations hit a new high in travel luxury. Electrical auxiliaries supply power for lighting and air conditioning.

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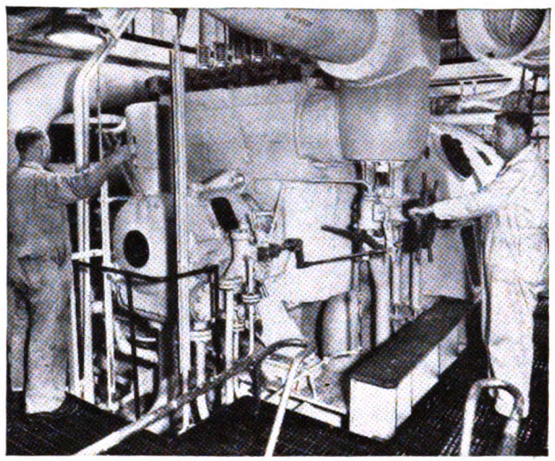
LUXURY LINERS TO "KEEP 'EM SAILING"

American President Liners "Cleveland" and "Wilson" depend upon G-E propulsion equipment to maintain fast sailing schedules

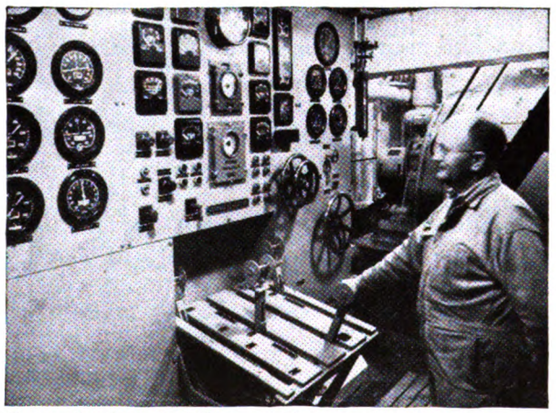
These two latest additions to the postwar fleet of American President Lines embody many "firsts." They are the biggest luxury liners built since the war—610 feet from stem to stern. They set new standards in passenger comfort. But most important, they will be fast, efficient carriers of passenger and cargo.

General Electric "Keep 'em Sailing" engineers supervised installation of this vital equipment. Before the turbines turn over to start these ships on their maiden voyage, service engineers from G-E's San Francisco office carefully check propulsion equipment and electrical auxiliaries. During official dock and sea trials, they make sure that actual performance meets or exceeds builders' specifications. Later these engineers will be available to supervise maintenance and overhaul and to offer the operator the complete facilities of G-E Keep 'em Sailing Service.

With the addition of the "President Cleveland" and the "President Wilson," the list of vessels powered by G-E propulsion equipment becomes even more impressive. This equipment, combined with Keep 'em Sailing Service, has proved itself to operators in terms of faster turn-arounds, less port time, and lower overhead. A G-E marine engineer will be glad to discuss equipment and service with you. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*



One of the two General Electric turbine-generator sets which supply propulsion power for the "President Cleveland" and the "President Wilson." A 10,000 hp synchronous motor is direct-connected to the propeller shaft.



Control of propulsion turbines and motors is centralized at this main control board. Turbine-electric drive permits flexible arrangement of propulsion machinery for greater payload.

KEEP 'EM SAILING SERVICE

General Electric service engineers stand ready to help you on any propulsion or electrical problem. G-E service shop crews operating out of every important port perform regular maintenance on a planned schedule—or handle any emergency repair or replacement job. Send for our new bulletin entitled "When Your Ship Comes In . . .". Address: General Electric Company, Sec. AA-4693, 1 River Road, Schenectady 5, N. Y.

GENERAL ELECTRIC

200-63

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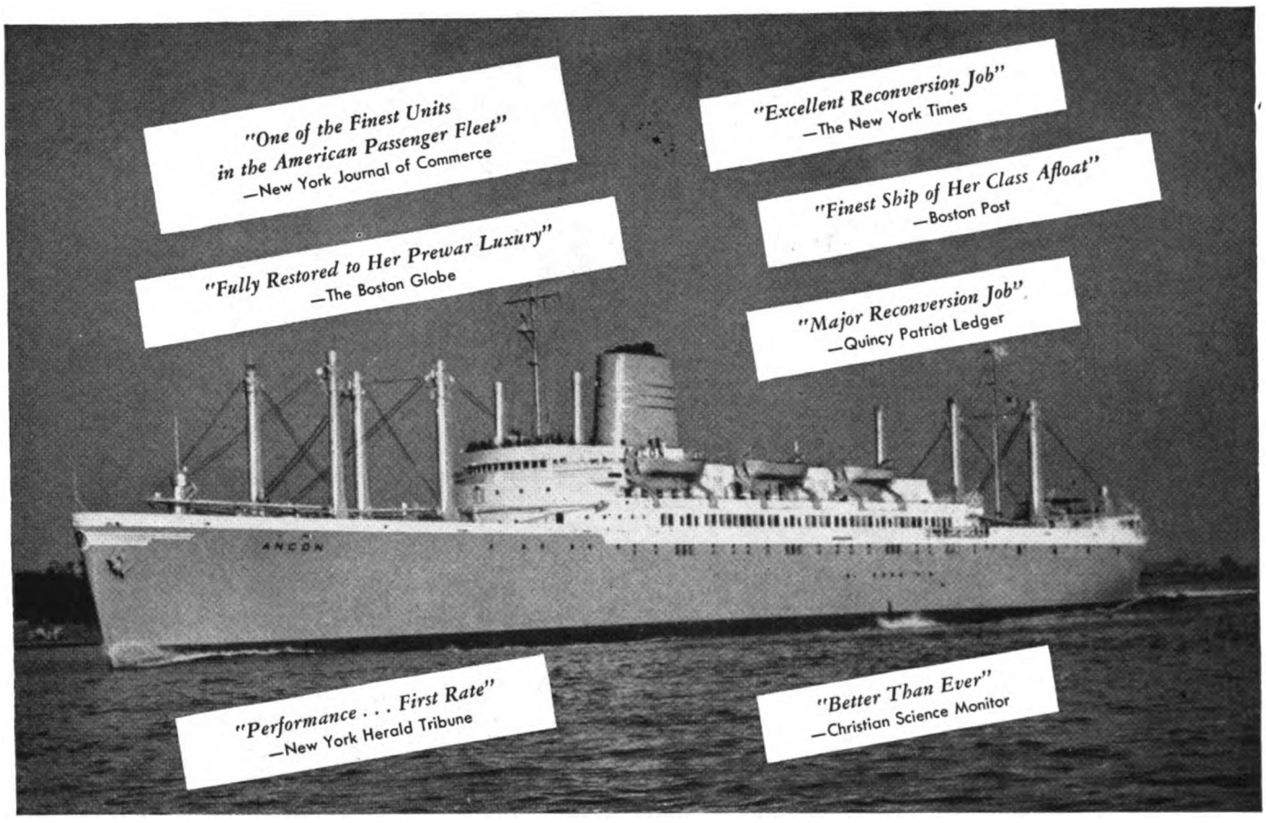

CONVERTED BY BETHLEHEM

The above statements appeared after the shipping news editors of the newspapers noted inspected the Panama Line's S. S. Ancon following her reconversion from a naval auxiliary by Bethlehem's Quincy Yard.

Accomplished with speed and economy, these results reflect Bethlehem's unsurpassed combination of efficient management, skilled craftsmanship, and complete and modern facilities for all types of ship conversions, and ship repairs.

Customer satisfaction always is the keynote of the phrase *"Converted by Bethlehem."*

SHIPBUILDING . . . SHIP CONVERSIONS . . . SHIP REPAIRS
NAVAL ARCHITECTS and MARINE ENGINEERS

BETHLEHEM STEEL COMPANY

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SHIP REPAIR YARDS

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Atlantic Yard
Simpson Yard
NEW YORK HARBOR
Brooklyn 27th Street Yard
Brooklyn 56th Street Yard
Hoboken Yard
Staten Island Yard
BALTIMORE HARBOR
Baltimore Yard
SAN FRANCISCO HARBOR
San Francisco Yard
Alameda Yard
SAN PEDRO HARBOR (Port of Los Angeles)
San Pedro Yard

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THEY'RE ASKING FOR

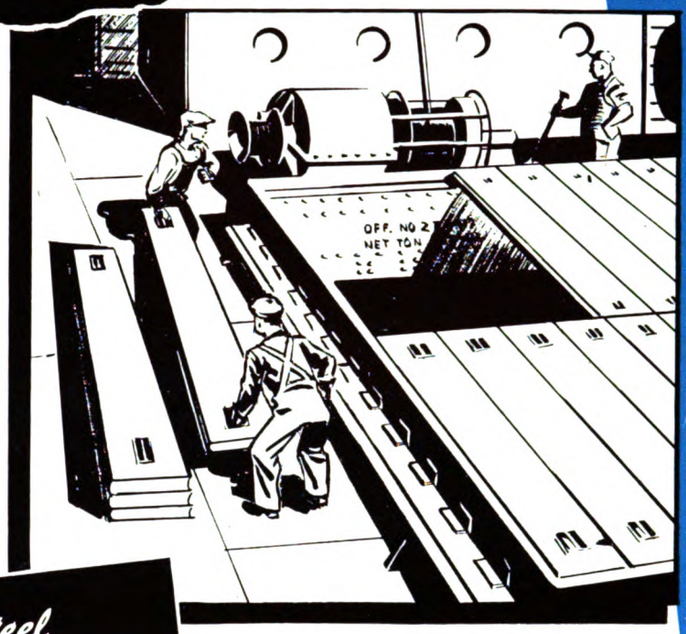
SEA-BOARDS

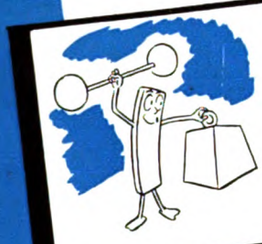
STEEL

ALUMINUM

HATCH

COVERS





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SEA-BOARDS
for maximum strength and durability

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SEA-BOARDS
for lightness and quick, easy handling

SEABOARD Steel and Aluminum Hatch Boards are in use in the Marine Industry of today, approved and accepted by Marine Classification Societies.

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MACHINERY CORP.

- QUICK-OPENING HATCH COVERS
- ANTICIPATING GOVERNOR CONTROLS FOR RECIPROCATING ENGINES
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- ROLLING BEAM ASSEMBLIES
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SEABOARD MACHINERY CORP.
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PACIFIC COAST REPRESENTATIVE: CONSOLIDATED SERVICES, INC.
71 Columbia Street, Seattle, Wash.

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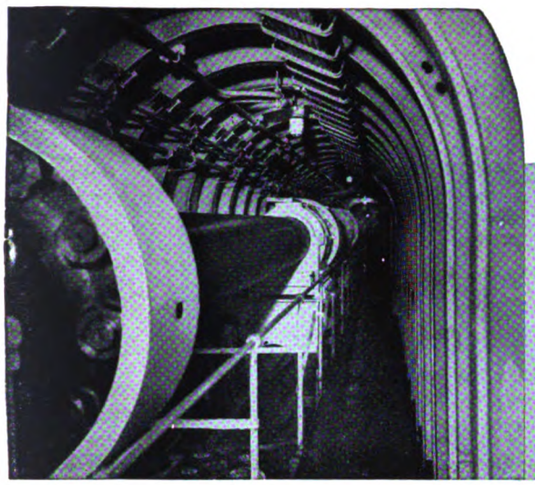


SHAFT ALLEY *Chatter*

American Export Announces Passenger Ship Program

John E. Slater, executive vice president of the American Export Lines, has announced that his company is prepared to proceed with an ambitious passenger liner program. Two all-passenger ships are planned for Western Mediterranean service exclusively. When announcing the company's plans, however, Mr. Slater cautioned that the program was contingent upon the Government fulfilling its part of the 1936 Merchant Marine Act providing for a fifty-percent construction subsidy as well as an operating differential.

These two new ships just announced are considerably changed from those tentatively announced last year. Originally the design called for 2 classes and 25,000 h.p. Under present plans the top deck has been removed, the deck house moved forward, cargo space reduced to 15,000 cubic feet dry and 50,000 feet cubic refrigerated. Third class accommodations have been increased from fifty to over 300 passengers.

American Export has spent over $750,000 during the past three years for plans and specifications. The result of this effort is the modified plans calling for vessels with an over-all length of 683 feet, beam of 89 feet, draft of 30 feet, and an estimated tonnage of 20,000 tons gross and 30,000 tons displacement. The horsepower has been increased to 50,000 h.p. developed by turbines driving twin screws and attaining a cruising speed of 22½ knots and trial speed of 25 knots.

The new liners will be capable of making 23-day roundtrips between New York and Western Mediterranean ports. Each will make 15 roundtrips per year, the two of them providing a service of 30 roundtrips per year transporting more than 56,000 passengers. Estimated total cost of these liners exceeds $40,000,000 which will be defrayed equally by American Export Lines and the Government.

DURING A RECENT VISIT to Moore-McCormack's Pacific Coast offices EMMETT J. McCORMACK, center, Vice President and Treasurer, was photographed by The LOG with K. C. "Casey" TRIPP, left, Pacific Coast Manager, San Francisco; and C. J. GRAVESON, Seattle Manager, right.

Passenger Accommodations

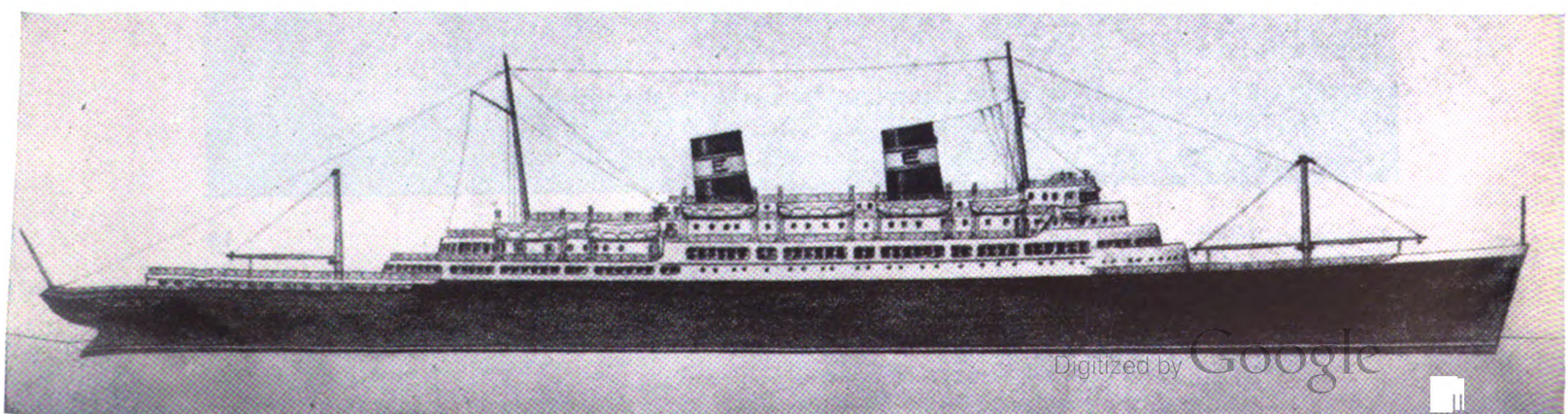
Export's new express liners will each accommodate 937 passengers in three classes—314 cabins, 318 tourist, and 305 third class. The ships are to be completely air-conditioned. First class and tourist class cabins will have individual connecting baths. Third class accommodations include two, four, and six passenger cabins with not more than six passengers occupying any stateroom.

Announcement of the new liner program raises to six the number of new passenger vessels which the company is endeavoring to acquire for its Mediterranean service.

Late in November work started in New York shipyards of the Bethlehem Steel Company on four new "Four Ace" passenger vessels which will cost more than $11,000,000, replacing the famous prewar ships of the same class. These vessels are designed to accommodate 125 one-class passengers and more than 4,000 tons of cargo, including reefer cargo. These will go into service some time in 1948. Export will operate these four new 17-knot vessels in fortnightly service between New York and principal ports in the Eastern and Western Mediterranean.

The company's cargo schedules will be maintained by the 14 modern "Exporter" type freighters, four modern "Modified Exporter" vessels, and two Victory ships, all of which are capable of 17 knots service speed.

NEW PASSENGER LINERS for American Export Lines, shown in sketch, will have a service speed of 22½ knots and accommodate 937 passengers. 683 feet long they will be turbine driven, twin screws, and develop 50,000 h.p. With an estimated gross tonnage of 20,000 tons and displacement tonnage of 30,000 tons they will have a cargo capacity of 1200 tons each. Crew will be about 500 officers and men. Two ships are to be built and possibly a third after first two are in operation. Completion date is tentatively set for 1950.



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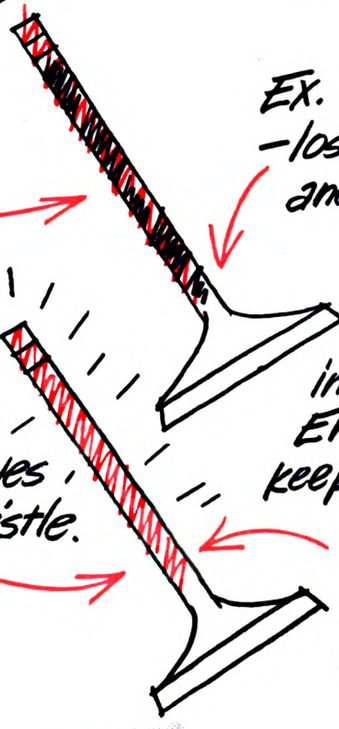
LUBE MEMO

Easy way to end sticky valve trouble



Sticky gum on our valves

Ex. valve on #1 isn't closing —loss of compression and power.

Nelson brags RPM DELO Oil keeps his valves clean as a whistle.

Nelson says compounds in RPM DELO Diesel Engine Lubricating Oil keeps valves free 3 ways:

1. Anti-oxidant stops gum formation
2. Metal adherent keeps oil film on stem — prevents wear.
3. Detergent cleans away carbon deposits.

Mon. — lube change due — get RPM DELO Oil

DIESEL ENGINE RPM DELO LUBRICATING OIL

STANDARD OF CALIFORNIA

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SHAFT ALLEY (continued) Chatter

Regular Coastwise Operations Planned by Coastwise Line

Coastwise Line, under the trade name of Coastwise Pacific Line, operates a fleet of 12 vessels under bareboat charter from the Government on a worldwide basis and also carries on extensive agency operations.

Under the corporate name of Coastwise Line, it has commenced operation of two vessels in a limited Pacific coastwise service and has applied for two more freighters for the same purpose. Although Coastwise realizes that it will maintain this limited service at a loss, it is doing so to protect those large water shippers with extensive tidewater installations. Without a temporary relief water service these shippers would be compelled to convert their installations to rail losing this trade forever to the coastwise water industry.

As quickly as coastwise water rates are revised to a compensatory level, Coastwise Line will begin regular full time operations. At that time Coastwise Line will bring ten valuable years of experience to the resumed service since it operated in the trade with six owned ships for ten years prior to the war.

W. T. SEXTON, president, entered shipping in 1908, becoming associated with the Panama Railroad Company, Cristobal, in the Canal Zone, as chief clerk. In 1918 he joined United Fruit in New York. Two years later he became associated with the late Kenneth Dawson in the Columbia Pacific Steamship Company at Portland. He rose to the position of vice president of States Steamship Lines, successor to Columbia Pacific Steamship Company. In 1936 he and Dawson organized the Coastwise Line, and in 1937 he came to San Francisco to become associated with U. S. Lines, in the capacity of Pacific Coast manager. In 1943 he helped organize Pacific Tankers, Inc., of which he became vice president. Three years later, he was one of the organizers of Pacific Far East Line, Inc., of which he became president. He resigned from both these posts earlier this year to devote his full attention to his wholly-owned interests. In 1945 he was also one of the organizers of West Coast Terminals in association with W. J. Bush, Dawson and others. He also operates Columbia Basin Terminals in Portland, which he organized in 1935.

B. H. PARKINSON, executive vice-president and secretary-treasurer, has had extensive experience in all phases of public utility operations, including transportation in the course of his 17-year connection with properties of the Electric Bond and Share Company. Because of this experience he was selected as treasurer when the company was organized. He was made general manager in 1946 and more recently appointed to his new post.

W. T. SEXTON, JR., executive assistant, has been actively associated with his father since 1942.

CAPTAIN VANCE D. TROUT, vice president in charge of operations of Coastwise Line, has spent 27 of his 30 years in the steamship industry in association with Mr. Sexton, except for a period beginning in early 1945 when he was engaged directly in war work. He began his career with the Alaska Steamship Company in 1917. He came with the Sexton interests in 1920, first as ship master, then as general superintendent of the Tacoma Oriental Line, later as general superintendent of the States Steamship Company. Ten years ago he came to California to become general superintendent in charge of operations for Coastwise Line, Coastwise Pacific Line, and U. S. Lines.

A. G. SAFHOLM, general superintendent, after having served an apprenticeship with Skinner & Eddy in Seattle, from 1917 to 1919, sailed with the Pacific Steamship Company and Admiral-Oriental Line in various unlicensed engine departments and licensed engineer positions until 1937, at which time he joined Coastwise Line as chief engineer of the ss COAST BANKER. In 1942, he was appointed superintending engineer of the company and in 1945 was advanced to general superintendent.

DEXTER G. FLINT joined Coastwise Line as second mate when the company started operations in April 1937 and was promoted to chief mate then master. He was promoted to port captain in July 1943 with headquarters in San Francisco.

G. F. VOYER, port engineer, joined Coastwise Line in 1937 as an engineer, having previously sailed aboard Pacific Steamship Company vessels for 11 years. In 1943, he joined the company staff at San Francisco as port engineer.

DEWEY PAINE was appointed purchasing agent and port steward of Coastwise Line in August, 1947, having previously served as assistant to the general superintendent since 1943. He joined Coastwise Line in 1940 and saw wartime service as purser aboard Liberty ships. He spent three years at sea at the start of his career and later went to work for McCormick Lines and States Lines.

J. A. EDERER, port engineer for the Northwest, Coastwise Line, has held that position since his release from active duty with the Navy in 1945. Commissioned as a commander he saw service in mid-Africa, and the Mediterranean theatres from 1940 to 1945. He joined Coastwise Line in 1937 and was chief engineer on the COAST SHIPPER prior to going to war. Starting in 1921 he was in the States Line oriental service for 11 years, and with the Pacific Atlantic Line for several years prior to 1937.

RAYMOND S. KIMBERK, manager foreign freight services joined Coastwise Line in 1937. He has been affiliated with

(Continued on Page 18)

THESE OPERATING MEN bring valuable experience to Coastwise Line's operations, from left to right, top row: W. T. SEXTON, President; B. H. PARKINSON, Executive Vice President and Secretary-Treasurer; W. T. SEXTON, JR., Executive Assistant; CAPTAIN VANCE TROUT, Vice President in charge of operations; A. G. SAFHOLM, General Superintendent; CAPTAIN D. G. FLINT, Port Captain; GEORGE F. VOYER, Port Engineer; DEWEY PAINE, Port Steward; JOE EDERER, Northwest Port Engineer, Seattle and Portland; RAY KIMBERK, Manager Foreign Services; HARRY KELLY, Manager Coastwise Service; H. H. WRIGHTSON, District Manager, Portland; DOUGLAS BARNES, Assistant Operations and Purchases, Portland; ED GARDNER, Southern California District Manager, Long Beach; ART STRUM, Assistant Operations and Purchases, Long Beach.

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SHAFT ALLEY (continued) Chatter

SFPE Marine Repair Shops Handle 40% of Army Ships

Men long associated with the engineering phases of ship operation and maintenance man the marine repair shops branch of San Francisco Port of Embarkation.

They are called upon to handle a wide variety of jobs, ranging from repairing a lifeboat davit to the full conversion of a transport or Army freighter.

Biggest job recently completed is the conversion of the wartime freighter HONDA KNOT into a vessel designed to bring home the World War II dead from the Pacific.

In the second quarter of 1947, the MRS handled major repairs on 15 Army vessels, minor repairs on 44, and 76 jobs on Port harbor craft and for other Port operations.

They handle approximately 40 per cent of the repair work necessary on the 32 Army transports and freight carriers working out of San Francisco Port of Embarkation. Private contractors and shipbuilding firms in the Bay Area handle the other 60 per cent.

The Marine Repair Shops are part of the marine engineering branch of Port Water Division.

J. N. Faville, a 1937 graduate of the U.S. Naval Academy at Annapolis, is head of the MRS. He came to the Army Port in October 1946 after wartime work as superintendent of the General Engineering and Drydock Co. operations at Pier 25, San Francisco, and of the Western Pipe and Steel Company waterfront repair operations at Pier 27. Previously he had been assistant to the chief diesel engineer in the office of famed naval architect, George Sharp. He also worked on the design, layout, and equipping of the engine rooms of the C-1 and C-2 freighters, 220-foot minesweepers, 180-foot minesweepers and DD-445 class destroyers.

Another widely known marine expert at the repairs shops is George W. Duncan, senior marine engineer.

He began his apprenticeship at the Union Iron Works in 1912 and graduated from the California School of Mechanical Arts in 1917. Then followed seven years of duty with the Navy in the engineering division. His later activities included work in principal Navy yards and with leading shipbuilding and engineering firms and as a chief engineer on Pacific Coast ships. He is a member of the American Society of Mechanical Engineers, the Society of Naval Architects and Marine Engineers, the Society of Military Engineers, the American Institute of Electrical Engineers, and the Society of Port Engineers. He joined the Port staff five years ago.

John A. Harris, marine engineer, formerly was supervisor of shipbuilding for the United States Navy Bureau of Ships at the Mare Island Navy Yard and was with various Pacific Coast shipyards supervising repair and construction work. He has sailed as chief engineer for various Pacific and Atlantic companies and is a graduate mechanical engineer of the University of California.

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Solomon Heads So. California Office as Surveyor

C. T. Solomon, formerly port engineer for General Steamship Corporation, San Francisco, is now in charge as surveyor of a new southern California office opened September 8th by the Board of Marine Underwriters of San Francisco, Incorporated, and the United States Salvage Association, Incorporated, New York. The office is at 106 East F. Street, Wilmington. Mr. Solomon sailed for years as a chief engineer and from 1938 to 1941 was with the engineering division of the Travelers' Insurance Company

MARINE REPAIR SHOPS BRANCH of San Francisco Port of Embarkation. Front row left to right: TOM MANNING, Machine Shop Foreman; HAROLD HUBBARD, Electric Foreman; BILL FORAKER, Machine Shop Foreman; FRANK MOORE, Welder Foreman; MARK McADAMS, Shipfitter Foreman; ROY GIGUERE, Pipefitter Assistant Foreman.

Back row: GEORGE RUTLEDGE, Chief Clerk; TED WENDT, Paint Foreman; EARL GRAFF, Sheetmetal Foreman; JEAN JOHNSON, Personnel Clerk; J. N. FAVILLE, General Superintendent; J. A. HARRIS, Marine Engineer; BILL MOSNER, Carpenter Foreman; HAROLD WILLIAMS; Pipefitter Foreman; HENRY BLEILE, Administrative Assistant; GEORGE W. DUNCAN, Marine Engineer.

WORTH B. FOWLER has been appointed Assistant Traffic Manager of American Mail Line. He succeeds E. E. Anderson, resigned, to become a member of the advisory commission to occupation forces on rehabilitation of Japanese shipping. Fowler was with WSA and the Navy during the war. A former employe of American Mail Line he was named New York representative of the company upon his release from government service.

Charles Perkes Forms New Steamship Agency

Charles A. Perkes, former Pacific Coast general manager for the Parry Lines, has formed a new steamship agency firm under the name of Perkes Navigation Company, Inc.

The new agency is located at 510 West Sixth Street, Los Angeles and, according to Perkes, will take over West Coast agency representation of the Parry Lines, the Friebourg Steamship Company and other new agencies to be announced at a later date.

The action follows the closing of all Parry Lines offices on the Pacific Coast subsequent to its withdrawal from trans-Pacific berth freighter operations. Perkes, as president of the new firm, will be assisted by W. J. Sweeney in the capacity of general manager.

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Captain Edgar P. Sharp, formerly a ship master for Pacific Tankers, now in charge of shipbuilding in Japanese yards, was in the United States over the Christmas holidays and reported there are 543 wooden yards and 83 major steel yards in the Nippon Empire and all are busy building largely small craft to rehabilitate the country's maritime industries.

CHARLES PERKES, who recently formed the new steamship agency firm, Perkes Navigation Company.

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SHAFT ALLEY (continued) Chatter

NEW MEMBERS of the Propeller Club of Los Angeles-Long Beach, include the following introduced at the November 21 meeting, left to right: E. G. HAMMER, West Coast Products, Ltd.; COMMANDER WM. MASON, U.S.N. (Ret.); JOHN E. PARKINSON, James Loudon & Co., Inc.; FRED NINNIS, Shepard ss. Co., visiting from San Francisco; and C. WARREN WELLS, Radiomarine Corp. of America, Wilmington. Members and guests heard brief reports of the recent national meeting at New York, delivered by President ARTHUR ELDRIDGE and Secretary HOWARD WOODRUFF.

Commercial Ship Repair Buys Winslow Yard

Commercial Ship Repair, Seattle, has announced the purchase of Winslow Marine Railway and Shipbuilding Company, Winslow, Washington. Originally operated as the Hall Shipyard, the Winslow yard has been in continuous operation for 73 years. The James Griffiths interests have operated the plant since 1914. James J. Featherstone and E. A. Black, associated with the Winslow yard during the war in superintending capacities, are co-owners of Commercial Ship Repair. Purchase price is reported to be in six figure brackets.

Consolidated Builders, Inc., Succeed Kaiser Co. at Portland

Consolidated Builders, Inc., engaged in ship repair, ship scrapping, and miscellaneous commercial work at Portland, Oregon, is the successor company to Kaiser Company, Inc., Portland. Albert Bauer is general manager of Consolidated Builders, Inc.

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Some 200 members of the Bilge Club, San Pedro (Calif.) met at the Lakewood Country Club, Long Beach, on Friday Oct. 24 for the annual mid-Winter membership banquet. Although formal speeches were a minus quantity, the head table boasted the presence of Club executives and honored guests, while the banquet room was filled with members enjoying the affair, which was strictly informal and featured a stag program of entertainment . . . Nuff said!

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Tanker Repair Job Awarded To Seattle Firm

Repair and conversion work on the ss COSSATOT, a T2-SAE 1 tanker, was awarded to Commercial Ship Repair, Seattle, following opening of bids at San Francisco on December 4, on a bid of $429,800. Work is scheduled to be completed by the end of January.

A GALA EVENT in the history of the National Secretaries Association was a luncheon given aboard the American Mail Line ss OREGON MAIL for the Seattle and Olympia chapters in November. Hostesses and host included from L. to R.: MISS AUDREY BOYLE, Secretary to the Auditor, American Mail Line; CAPTAIN OTTO FORD, Skipper of the OREGON MAIL; MISS LENA RE, Secretary to A. R. Lintner.

(A Marine Salon, Seattle, photo.)

HOLIDAY SEASON EVENTS AT SEATTLE were inaugurated by Commercial Ship Repair with their second annual pre-Thanksgiving party on November 21, 1947. Arranged as a dinner dance, details were meticulously cared for to include an appetizing meal, good music, a floor show, corsages for the ladies, fountain pens for the men, and an enjoyable evening for all. Port engineers, members of the marine inspection service, and their wives, were among those included as guests.

Coast Guard engineering department and marine inspection service present included from left to right: E. A. EVE; L. H. HIRSCHY; a man with his neck out; JAMES A. FEATHERSTONE, partner, Commercial Ship Repair; H. E. PETERS; LEE MOYER; CAPTAIN G. R. O'CONNOR; E. H. JOYCE; GEORGE F. HAMILTON; CHARLES C. BENNETT; ERNEST W. RUEF; THOMAS F. KANE; J. W. MAIEN; MAYNARD D. ORR. Kneeling are E. A. BLACK, partner, Commercial Ship Repair; DOCK STREETS, port engineer, American Hawaiian Steamship Company.

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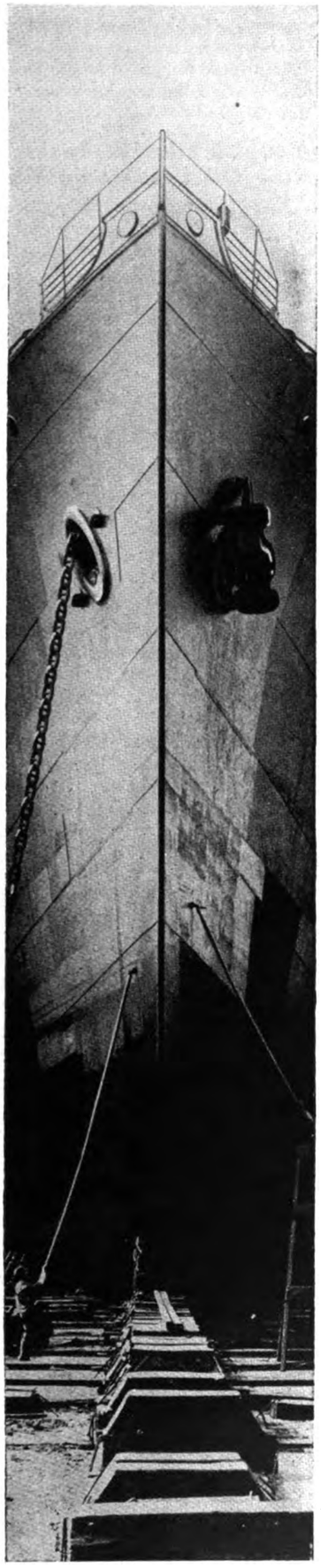

Still represents the greatest advancement in commercially produced anti-fouling paints

There is good reason why many ship owners, especially those who operate in the tropics, regularly specify INTERNATIONAL "SUPERTROP" ANTI-FOULING. The resistance of this reasonably priced paint to fouling of all kinds far exceeds that of any other commercially produced bottom composition. It furthermore provides greater protection against corrosion than is offered by other anti-fouling coatings.

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The effectiveness of "SUPERTROP", however, like that of all other protective paints is in a great measure dependent upon proper application. Following the common sense practice outlined in the INTERNATIONAL booklet "The Painting of Ships" will go a long way in reducing maintenance costs. Send for a copy.

International Paint Company, Inc.

21 WEST STREET, NEW YORK 6, N. Y. — International MARINE PAINTS — 901 MINNESOTA ST., SAN FRANCISCO 7, CAL.

AGENTS IN EVERY IMPORTANT PORT

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SHAFT ALLEY (continued) Chatter

States Marine Inaugurates West Coast-Europe Operations

To introduce its first fast C-2 on regular service between Pacific Coast ports and northern Europe, States Marine Corporation held receptions aboard the ss GOLDEN STATE in November at Seattle, Tacoma, Portland, San Francisco and Long Beach. States Marine operates berth line service from the west coast of the United States to both Northern Europe and Mediterranean ports. In charge of the west coast operations of this line is D. E. Kermode, below, with members of his newly-formed Pacific operating staff.

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Coastwise Operations

(Continued from Page 16)

W. T. Sexton in various capacities for over 27 years.

HAROLD M. KELLY, manager of Coastwise services, became associated with Coastwise Line as assistant to the general superintendent in 1941. Prior to joining Coastwise, he was operating manager in San Francisco of the Hammond Shipping Company, and previously was in charge of the operating department of Pacific Steamship Lines. He was taken prisoner by the Japanese at Manila, and interned in Santa Tomas and Los Banos during entire World War II.

H. H. WRIGHTSON, district manager Coastwise Line at Portland, was named to that position in January, 1946, being promoted from operating manager at Portland, which he had held since June, 1943. Previous to joining Coastwise Line he was with the Luckenbach Line at Portland for 20 years, from 1922 to 1942.

DOUGLAS B. BARNES handles purchases and claims for Coastwise Line at Portland. In World War II he was with the 41st Army Division in the South Pacific for two and a half years and upon returning to Portland in February, 1946, he joined Coastwise Line staff in the purchasing department.

Coastwise Line operations in Southern California are under the management of EDWARD A. (ED) GARDNER, district manager and ARTHUR (ART) STRUM, both with headquarters at Long Beach.

Gardner, who was born in Seattle, started with American Express Company in that city, later becoming district manager at Portland. He left to become associated with Dollar Steamship Company and in 1930 he joined Coastwise as general passenger agent at Portland.

Strum is in charge of Coastwise operations at Long Beach. Before joining Coastwise he was identified with Charles Martin & Company of San Pedro for 20 years, where he was surveyor of petroleum cargoes.

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STATES MARINE CORPORATION'S Pacific Coast Operations. . . . Top row, left to right: D. E. KERMODE, charge of West Coast Operations; THEODORE PLESSNER, Port Purser, San Francisco; CHARLES WESTLIN, Port Engineer, New York; CAPTAIN GEORGE JOYCE, Port Captain, San Francisco; WILLIAM D. CASEY, Port Steward, San Francisco.

Bottom row, left to right: CARL CULVER, owner's representative for States Marine in the Pacific Northwest; FRED I. NYSTROM, Jr., Operating Manager, International Shipping Co., agents for States Marine in Pacific Northwest; A. W. KINNEY, President, International Shipping Co.; W. E. CARLEY, Master of the GOLDEN STATE.

McGuirk Elected President New Orleans Steamship Assoc.

E. J. McGuirk, veteran steamship man, has been elected for a second term as president of the New Orleans Steamship association.

McGuirk left his position as manager of the Texas Transport and Terminal Company in 1942 to serve as port chairman of the British Ministry of War Transport and in November of 1946 severed connections with the TT and T., to take over his duties with the association.

For 32 years he has been closely affiliated with British shipping interests both in the Caribbean and Atlantic, having held high positions with the Leyland and Ward Lines.

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Personnel Changes In American Bureau of Shipping

American Bureau of Shipping announce the following personnel changes in their organization: Ralph C. Christensen, formerly in charge of the Balboa, Canal Zone, office has been appointed principal surveyor of the Newport News, Va., district. Roba Yarbro, of the St. Louis office has been transferred to the Nashville, Tenn. office and Jack Deckard of the San Francisco office has been transferred to the Los Angeles office.

Announcement has also been made of the opening of a new office with exclusive status at Rio de Janeiro, Brazil. Robert M. Brigham, formerly at the Philadelphia, Pa., office will be in charge of the new office as an exclusive surveyor.

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Arrow Line Wins Approval For Gulf-Intercoastal Route

Examiners of the Interstate Commerce Commission have recommended authorization of intercoastal service between New Orleans and other Gulf ports and Pacific ports by Arrow Line, a subsidiary of the Waterman Steamship Corporation, officials of the New Orleans Traffic and Transportation Bureau have announced.

In their report, the examiners, headed by S. R. Diamdson and A. L. Corbin of the ICC, said evidence indicates a shortage of shipping space in the Gulf intercoastal trade since 1939.

In 1941 and the year previous, they said, this was due to the war emergency as ships were diverted to other areas. Since then some vessels have been sailing with some empty cargo space. However, it was pointed out that labor disturbances, threats of strikes and the scarcity of commodities have induced shippers to send their goods by rail. Shippers have been unwilling to risk missing sailing schedules and the threat of having their goods left on the docks for several weeks, the Bureau pointed out.

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NEWPORT NEWS HAS WHAT SHIPS NEED

Machine and Manpower

PROBABLY there is no American port where machinery plays a larger part in ship loading and unloading than it does at Newport News.

Nevertheless, at Newport News manpower is abundant and competent. Hundreds of stevedores are regularly employed, and they are skillful and willing.

And 1500 railroad workers operate the Chesapeake & Ohio terminal division serving this port.

Possibly there is no other American port where a higher ratio of crane, warehouse-truck, and railroad-car capacity to cargo tonnage handled is maintained.

At Newport News things get done. Traffic moves. That is how Newport News helps ships make money.

The Chesapeake & Ohio World Commerce Department is a service organization fully equipped to help exporters, importers, forwarders and ship operators on all problems of rail and ocean shipping of foreign and intercoastal freight.

If you have a problem, contact G. C. Marquardt, General Manager, World Commerce Department, Chesapeake & Ohio Railway, 233 Broadway, New York 7, N. Y., or any C & O representative.

THE CHESAPEAKE & OHIO RAILWAY

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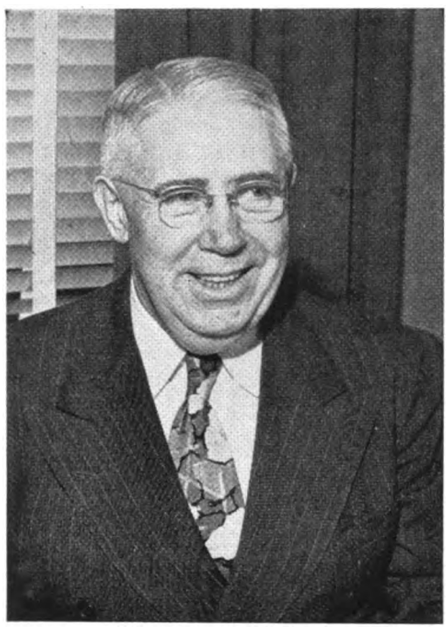
SHAFT ALLEY (continued) Chatter



THOMAS J. COKELY, newly elected Vice President in Charge of Operations for American President Lines. Operating Manager for the company Mr. Cokely has the distinction of being the oldest company employee with 43 years continuous service with APL and its predecessor, the Dollar Line.

Krebs Joins NFAS

Alfred U. Krebs has joined the National Federation of American Shipping as counsel, and in his new capacity will advise the Federation on legislative matters.

Mr. Krebs was with the Maritime Commission for 18 months as chief of its Subsidy Section, General Counsel's Office, previous to joining the Federation. During World War II he served as a Lieutenant in the U.S. Naval Reserve, and before that was general solicitor of the Ingalls Shipbuilding Corporation, Pascagoula, Miss. He holds an A.B. degree from the University of Alabama, an LLB from the University of Virginia, and an LLM from Georgetown University.

Mr. Krebs is currently a commentator on proposed revision of Title 46 of the U.S. Code.

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Conference Reduces South America Surcharges

The River Platte and Brazil Conference has announced a reduction of 10 percent in surcharges on southbound traffic to the east coast of South America, effective immediately, according to the New Orleans Traffic and Transportation Bureau.

The surcharge to Rio de Janeiro, Santos and Buenos Aires is reduced from 35% to 25%, at Montevideo and other River Platte ports the reduction is from 25% to 15%. No change has been made to other Brazilian ports other than Rio and Santos, the Bureau said.

SF Trade Center Heads Named by Governor

San Francisco's World Trade Center looms closer in the future with Governor Earl Warren appointing eight members to the San Francisco World Trade Center Authority. The authority, created by legislative act last June, is authorized to issue revenue bonds to finance structures for a centralized trade headquarters.

Proposals call for a 30-story structure in a two-block area of lesser buildings to house offices of trade and transportation companies and related activities. A tentative site has been suggested in the present downtown produce area.

Named by Governor Warren were:

Leland W. Cutler, insurance executive and former president of the Golden Gate International Exposition who has taken a leading part in promoting the project; Floyd M. Billingsley, business agent of the San Francisco Motion Picture Operators; J. A. Folger, wholesale tea and coffee dealer; all of San Francisco; Paul L. Davies, San Jose food machinery manufacturer; L. K. Marshall, Lodi, president of the Wine Growers Guild; Professor E. T. Grether, dean of business administration, University of California, Berkeley; Charles Howard, Oakland terminal operator, and George Pollock, Sacramento contractor.

Statutory members of the board include the directors of public works and finance for the State and the president of the Board of Harbor Commissioners.

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PORT STEWARDS' ASSOCIATION

Second annual dinner dance of the Port Stewards Association of the Pacific Coast will be held at the Green Hills Country Club, near San Francisco, Saturday, January 24th. Arrangements are being made by a committee headed by Frank B. Ingham, United States Lines, president.

In charge of tickets for the party are Con Crimmins, American President Lines, and Harry Christenson, American-Hawaiian Steamship Company. Entertainment is being arranged by Claude Martin, Shepard Steamship Company and the dinner details are being handled by L. H. Beckendorf, W. R. Chamberlin & Company and Jack McCartney, Pacific American Steamship Association.

James G. Macart, new assistant port steward of Pacific Far East Line, was elected a member. It was announced that Rudolph R. H. Wagner, formerly assistant port steward of this company, has succeeded Vince Andrus, resigned, as head of that department.

F. P. Cannon, Matson Navigation Company, reported at the December meeting of the Port Stewards Association at San Francisco on a recent eastern trip during which he conferred with Otto H. Cumann, American South African Line, president of the Port Stewards Association of New York. Mr. Cannon arranged for an exchange of minutes of the two associations to keep each informed of the other's activities.

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Waterman Ship Sails Friendship Train Cargo

The cargo ship ss ALAWAI, owned and operated by Waterman Steamship Corporation, departed from New Orleans, December 8th on the first leg of its mission as a Friendship Train cargo ship, according to E. O. Jewell, general manager of the New Orleans Port Commission. The ship has been made available free of charge to the Friendship Train movement as a contribution by Waterman.

The ss ALAWAI loaded about 2,500 tons of cargo in New Orleans and proceeded to New York to load additional Friendship Train relief supplies for Italy. She is scheduled to depart from New York for Naples about December 20th with a cargo approaching 9,000 tons.

The ss ALAWAI, which was built and served in World War II, has been converted by Waterman into a C-2 cargo ship. She is under the command of Captain K. Aalestad, master of the vessel.

The Waterman Steamship Corporation is one of three steamship concerns volunteering to haul the relief supplies to famine-stricken Europe.

NEW COMMISSIONER named by the mayor to the Commission of Public Docks, Portland, is CHESTER A. MOORES, left, L. R. TEEPLE, center, Vice Chairman; GEORGE H. BUCKLER, right, chairman. Other members of the commission are Homer Shaver and John W. Shuler.

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Continued from previous issues of The LOG

MORE EVIDENCE OF OXI RESULTS

THE CHEMICAL CLEANING PROCESS FOR THE FIRESIDE OF BOILERS

The following excerpts are taken from ACTUAL REPORTS
(Originals in our files.)

CLEANING NOT NECESSARY **Report 9167**
Chief Engineer reports firesides of boilers perfectly clean, no cleaning necessary prior to lay-up, the use of OXI entirely satisfactory and that he would gladly use OXI on any other ship to which he may be assigned.

FUEL CONSUMPTION REDUCED **Report 8149**
Although vessel is now operating at average of 2 RPM's less than previous voyage, the fuel consumption shows a difference of 30 bbls. per day of which at least 15 bbls. per day can be attributed to the use of OXI Crystals.

NO MANUAL CLEANING REQUIRED **Report 7124**
Both boilers have been in continuous operation since 3-18-47. Vessel now in shipyard for annual inspection. Only deposit remaining on tubes of boilers is where soot blowers do not reach and these deposits are loose on tubes. Only boiler cleaning necessary will be the use of air lance, and boilers are then ready for annual inspection. Stack temperature down 30° and fuel consumption shows daily saving of 15 barrels.

18 MO. CONTINUOUS OPERATION **Report 9160**
The above vessel has been using "OXI" for the past eighteen months. Chief Engineer states that every other trip on the Northern end of each voyage he opens one of the boilers for inspection and all there is, is a light fly ash which can be removed by blowing your breath on the screen tubes and economizers, also on the superheaters.

OXI SURPRISED THE CHIEF **Report 10179**
Stack Temperature reduced 25 degrees. Superheat up 5 degrees. Fuel Oil Consumption, which is average for sea time, down 10 bbls. per day. Changed to next smaller burner tips.

RPM'S INCREASED—FUEL SAVED **Report 11190**
Stack temperature down 60°. Air pressure down .1", oil pressure down 15#, fuel oil consumption down 10 bbls. per day with an increase of 3.3 RPM's.

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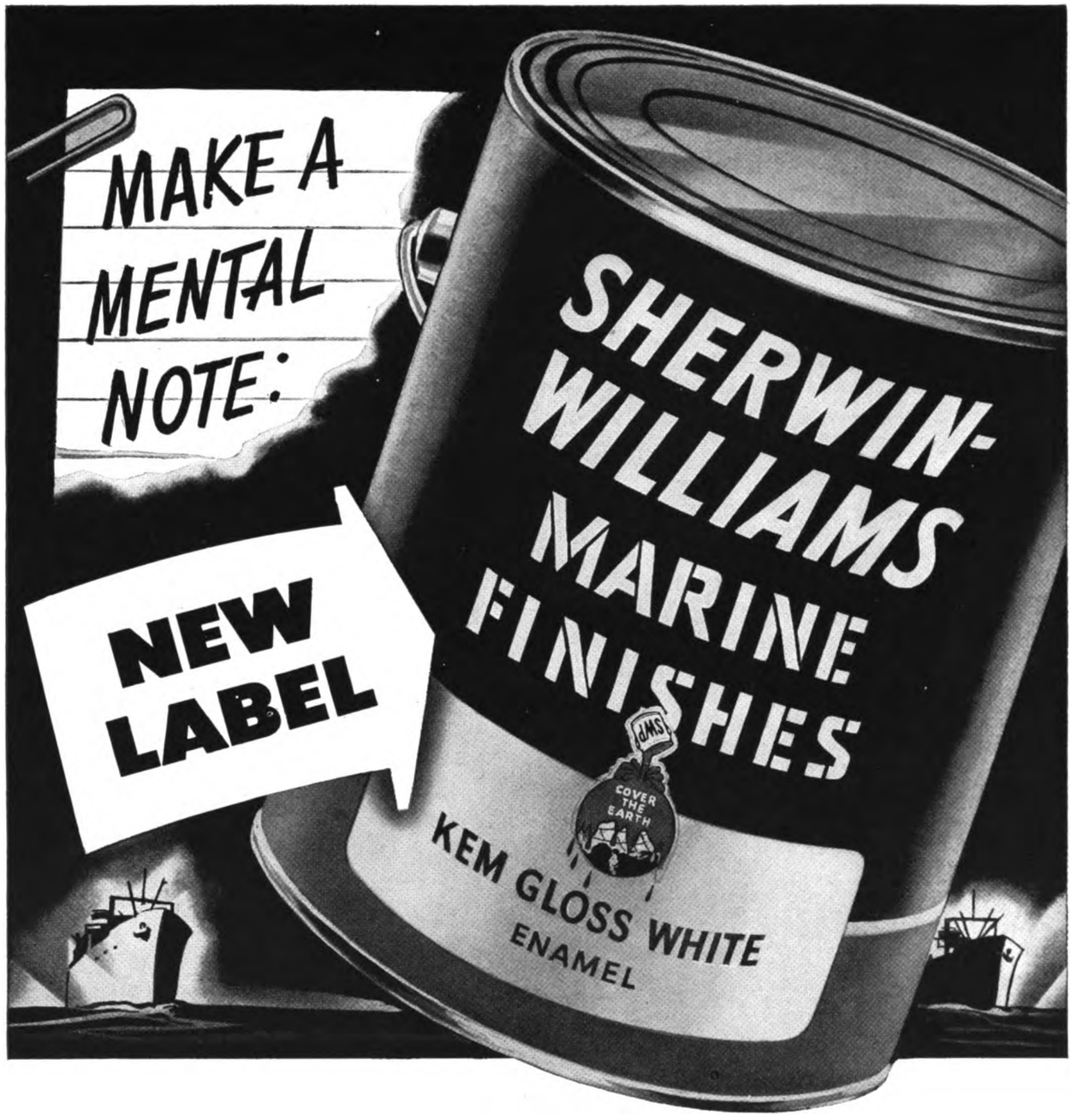

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OF AMERICA'S MARITIME INDUSTRIES
Shipbuilding Naval Architecture
Ship and Port Operations
Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

JANUARY, 1948 Vol. 43, No. 1

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Editorial Features

America's Newest Luxury Liner—
SS PRESIDENT CLEVELAND 24
President's Committee Report 29
The Marshall Plan Report 31
Harriman Committee Report 32
Washington Reporting 34
Naval Architects Conference 36
Various Governing Bodies and
Their Effect on Shipping 36
Some Considerations in the Design of
Modern Ships 38
Use of Aluminum Alloys in Ship Construction 42
Electronics on Shipboard 43
Factors in the Use of Plastic Ship-Bottom Paints 44
Stewards Formula for a "Happy Ship" 46
Operating Ideas
How to Determine Deadweight Tonnage 54
Fuel Economy 55

Departments

Shaft Alley 14-20
Society of Port Engineers 50-52
Operating Ideas 54-56
Ports 58
Equipmentalk 68-74

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Coast Guard Changes Distress Signal Specifications

On October 24th the U. S. Coast Guard approved new specifications covering distress signals for merchant ships and tankers, ocean-going, coastwise and Great Lakes. The new specifications were published in the Federal Register on October 31, 1947, Page 7072.

These are the first important changes in many years in the specifications for distress signals to be carried on lifeboats, life rafts and in the pilot house or on the navigator's bridge of vessels of 150 gross tons and over.

They represent the Coast Guard's decision to increase safety at sea by laying down strict specifications for watertightness and performance reliability of pyrotechnic distress signals. *Service use is limited to three years from date of manufacture, and signals not bearing a date of manufacture under the new specifications cannot be carried after January 1, 1949.*

Details of the new specifications cover seven pages in the Federal Register for October 31st. All steamship men concerned with safety equipment will want to acquaint themselves with the changes made by the Coast Guard.

↕ ↕ ↕

Reactivating Navy Tankers From Lay-up Fleet

Shortage of tankers caused the United States Maritime Commission recently to take thirteen T-2 tankers, formerly operated by the United States Navy, from the lay-up fleet at Benicia, California and send them to Pacific Coast yards for conditioning for service. Pacific Tankers is agent for six of these vessels and the American Pacific Steamship Company for the remaining seven.

Following is a list giving the names of the tankers, agents, cost of the overhaul and the yard doing the work:

PECOS, ex-CORSICANIA, Pacific Tankers, Moore Dry Dock, Oakland, $400,008.

ESCAMBIA, American-Pacific, Todd Shipyards, San Pedro, $495,310.

STILLWATER, ex-CACHE, Pacific Tankers, Willamette Iron and Steel, Portland, $434,678.

COSSATOT, ex-FORT NECESSITY, Pacific Tankers, Commercial Ship Repair, Seattle, $429,000.

EUTAW SPRINGS, ex-CHEPACHET, American-Pacific, General Engineering, Alameda, $471,267.

HARLEM HEIGHTS, ex-SUAMICO, American-Pacific, Everett-Pacific Shipbuilding and Dry Dock, Everett, $485,732.

FORT DUQUESNE, ex-CAWANESQUE, American-Pacific, Everett-Pacific, $544,516.

MILLICOMA, ex-CONESTOGA, American-Pacific, Todd Shipyards, San Pedro, $457,520.

NEWTON, ex-SAUGATUCK, Pacific Tankers, Todd Shipyards, Seattle, $365.665.

SCHUYLKILL, ex-LOUISBURG, American-Pacific, United Engineering, Alameda, $465,932.

SEBEC, Pacific Tankers, General Engineering, Alameda, $475,697.

PAMANSET, Pacific Tankers, Puget Sound Bridge and Dredge, Seattle, $381,606.

TALLULAH, ex-VALLEY FORGE, American-Pacific, General Engineering, $474,292.

In addition, approximately $100,000 was spent on each tanker in San Francisco bay for drydocking, cleaning and other work necessary before sending it to the repair yard.

Tankers going to Pacific northwest and southern California yards were towed.

Each yard is to do the work in 40 days.

The Navy is reactivating four more tankers at San Francisco. They are the ss MISSION SAN DIEGO, MISS SAN GABRIEL, MISSION PARISSIMA and SOLEDAD. The first is at the Moore yard, the second at General, the third at United and the fourth at Bethlehem's San Francisco yard.

↕ ↕ ↕

SS WASHINGTON Returns To Transatlantic Service

The return of the WASHINGTON, second largest American passenger vessel, to regular transatlantic service on February 4 has been announced by the United States Lines. She will operate between New York and Cobh, Southampton and Havre.

The WASHINGTON, which carried 315,000 troops during the war as the transport USS MT. VERNON, and later served as a war-bride transport, has been at Newport News Shipbuilding and Dry Dock Company for several months to fit her for passenger service.

The 22,846 ton vessel, one of the Line's most popular pre-war luxury liners, has not been reconverted to her original de luxe status, but will render service as a one-class ship with berth capacity for 1,108 passengers. As such she will fill a real need in the transatlantic field for moderate-cost transportation on a large vessel.

As a passenger vessel, the WASHINGTON, while necessarily lacking the luxury of her pre-war service, will offer the essential comforts. The unpretentious but spacious public rooms on the promenade deck include the main lounge, forward lounge, writing room, smoking room and veranda cafe, and all passengers will have full run of the ship and the use of all open and enclosed promenade deck space and public rooms. Passengers will be served well-prepared American food of the highest quality.

↕ ↕ ↕

The Canadian War Assets Corp. has sold all of Canada's war-built merchant fleet for $77,121,000. Of the 170 ships sold, 109 were dry cargo vessels of 10,000 tons. They were sold for an average price of $474,036 each. One hundred were 4700-ton dry cargo vessels, which brought an average of $402,365.

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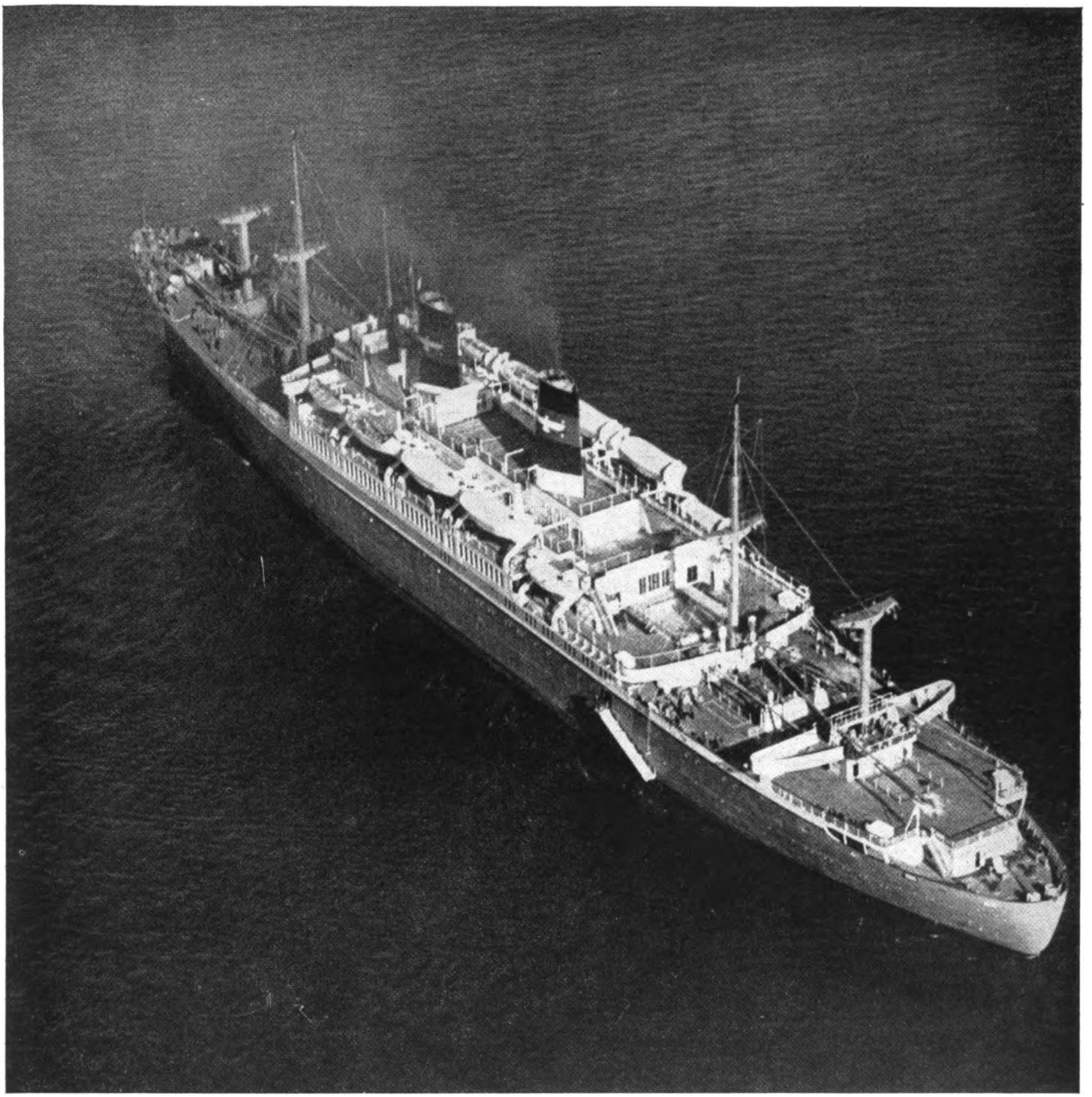

"The PRESIDENT CLEVELAND is the finest passenger liner in the American Merchant Marine today." . . . . .

says W. Miller Laughton, San Francisco, General Manager of the Bethlehem Steel Company's Pacific Coast yards, in describing this new 23,000-ton turbo-electric luxury liner just completed by his firm's Alameda, California, shipyard, and sent on her maiden voyage December 27th by the American President Lines over its historic trans-Pacific trade lanes.

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AMERICA'S NEWEST LUXURY LINER

PRESIDENT CLEVELAND

Largest American-built postwar passenger vessel, with twin engines and aluminum housing, delivery by Bethlehem-Alameda to American President Lines for Trans-Pacific service.

Two maiden voyages—one December 27 and the other scheduled for the spring of 1948—present the American Merchant Marine with two significant events, both having strangely contrasting overtones. Each sailing could serve as a subject for an editorial. Each editorial could, with equal honesty, point with pride and view with alarm.

The ships involved are the 23,000-ton PRESIDENT CLEVELAND and the PRESIDENT WILSON; both built by Bethlehem-Alameda Shipyard at Alameda, California, for the account of the United States Maritime Commission to be chartered to American President Lines for operation on that company's important trans-Pacific route. Historically, they are notable ships on several counts. They are the largest commercial ships ever built on the west coast and the largest American luxury liners to be put into postwar service. Considering both newness and size, their relative positions in the United States Merchant Marine is one level below that of the ss AMERICA, launched in 1939.

None of the above facts could constitute reason for alarm when looked at as isolated data. There is, however, another perspective. As of November, 1947, there were 125 passenger or combination passenger and cargo ships under construction in the United Kingdom yards, 13 in France, 8 in Spain, and 7 each in Sweden, Norway and the Netherlands. Even Italy had 6 of these vessels building. With the delivery of the PRESIDENT WILSON next spring, all present indications point to the probability that the United States score on this international scale will then be zero.

Regardless of this dim prospect for the future of American passenger tonnage, there is reason for pride in what the United States has built, for the PRESIDENT CLEVELAND and the PRESIDENT WILSON epitomize new strides in the achievement of travel comfort, in sea-going safety, shipbuilding techniques and the use of new materials. They carry standards of American luxury and efficiency into the trans-Pacific service—one of the most vital of United States foreign trade routes. As with every passenger ship, theirs is partly the function of building foreign trade and promoting international understanding through the swift exchange of peoples and goods. In the furtherance of that purpose, their entry into trans-Pacific service is an important milestone in the long process of restoring the broken channels of trade in an area whose future has often been described as the "Era of the Pacific."

The PRESIDENT CLEVELAND and the PRESIDENT WILSON were the ninth and tenth hulls, respectively, laid down under a contract for ten such P-2 type vessels originally designed as Navy transports. Implicit in these designs were numerous features calculated to render the ships suitable to conversion as peacetime commercial vessels. The first eight of these ships, which Bethlehem-Alameda also built, were delivered to the Navy and subsequently turned over to the Army Transportation Corps which now operates them as "Admiral" type transports.

Decision to convert the last two hulls on the contract into commercial vessels was made shortly after the end of hostilities in 1945—approximately a year after the keel of the PRESIDENT CLEVELAND was laid down on August, 28, 1944. Although the ship has been scheduled to be delivered at various times since then, the chronic lack of materials that has plagued all postwar conversion work held up completion until mid-December.

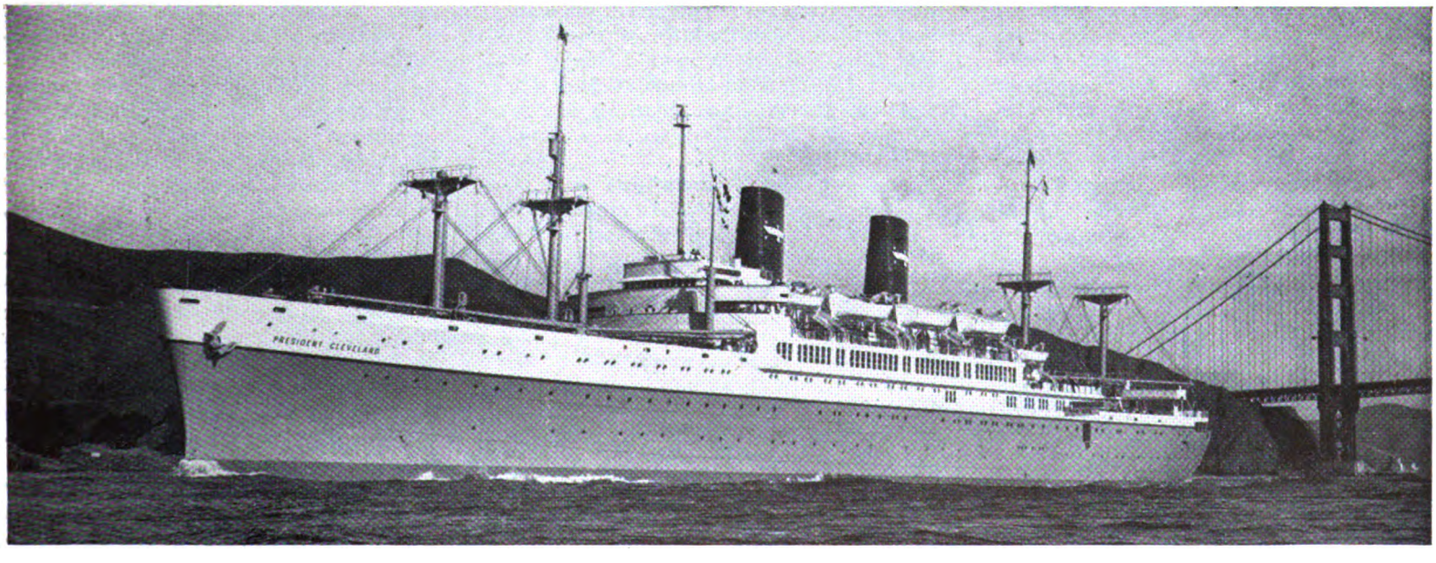
Since the PRESIDENT CLEVELAND and PRESIDENT WILSON are identical with the exception of a few interior decorative features, a description of the former will serve for both.

Dimensions of the CLEVELAND

The hull of the PRESIDENT CLEVELAND, 608 feet, 5¾ inches overall with a 75 foot, 6 inch beam, encloses three complete decks A, B, and C, and a partial deck D. Surmounting these are an upper deck which runs from the stem almost to the stern, a promenade deck extending from the stem to frame 168, a boat deck and a navigating bridge deck.

Among the relatively new types of shipbuilding techniques in the CLEVELAND is the use of riveted aluminum. The entire midship house above the boat deck is thus constructed which, according to the builders, results in a saving of almost 100 tons of weight in this area. Welin gravity type davits servicing 10

THIS NEW "QUEEN OF THE PACIFIC" is the largest passenger liner ever built on the Pacific Coast and the largest commercial vessel built in the United States since 1939.



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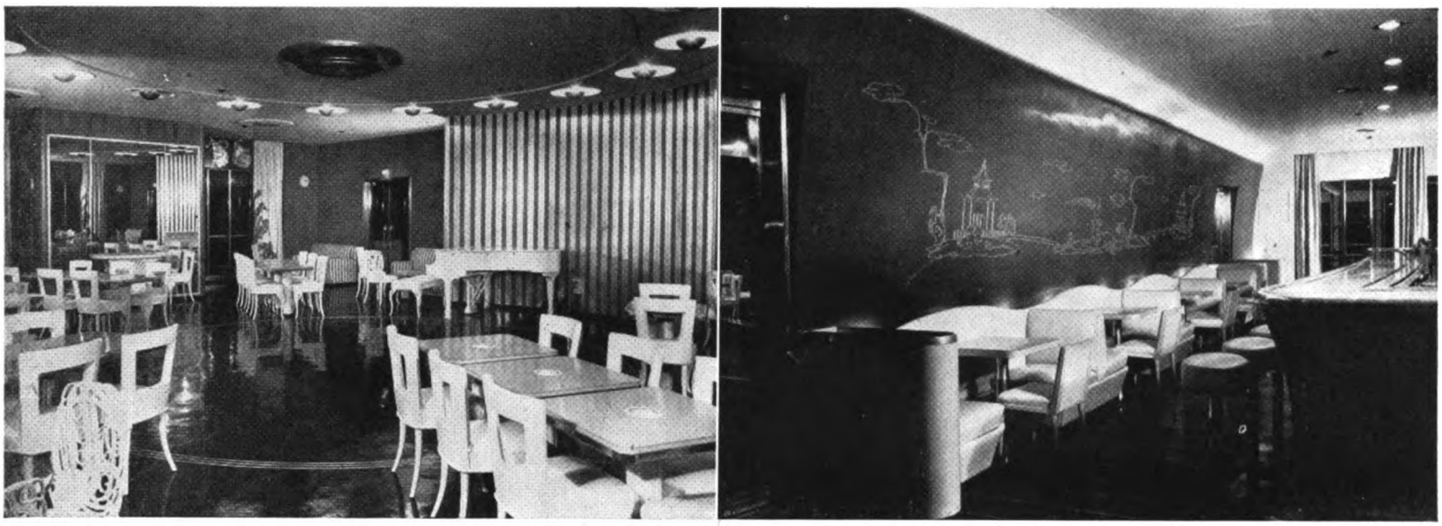

LUXURY ABOARD THE CLEVELAND . . . The Marine Veranda overlooks both the Promenade Deck and the swimming pool area and features a decor of white and midnight blue. Removable ashtrays are centered in each of the attractive stain resistant and cigarette proof table tops by the Formica Insulation Company. The oval dance area like the rest of the rooms is floored with a new plastic vinyltile. To the extreme left is a movie projection booth (mirror faced) used when the room does double duty as a theater for pre-release motion pictures. Right, the Cocktail Lounge with curved red walls which are set off by delicate gold tracings, and its imposing shiny brass bar.

life boats are also of aluminum.

Topping the midship superstructure are two funnels both of which taper uniquely upwards from a broad base, raked at the top and which carry out the distinctive streamlined contours of the ship—a characteristic that is enhanced by the raked stem, cruiser stern and the general profile of the midship house.

Passenger capacity of the ship is 550, divided into three classes: 198 first, 132 tourist, and 220 third. The disproportionate number of third class is based on berthing requirements peculiar to the trans-Pacific trade where large numbers of Orientals prefer this type of accommodation.

Promenade Deck

The promenade deck, other than the foredeck, is devoted almost exclusively to first class public space. Facing forward is the main lounge whose decorative features will carry out a Chinese modern theme. Large glass doors, both port and starboard, lead aft from this to a foyer and stair hall, which leads into a writing room and library separated by an uptake casing.

Directly aft of the above is a mahogany paneled smoking room with an adjacent service bar. The after access to this room is through centerline doors opening onto the main stair hall. Here, stairways flank a self-leveling Otis elevator and also opening onto this area is the main novelty shop.

From this elevator foyer, port and starboard passageways open into the cocktail lounge where again, the Chinese modern motif predominates. A unique decorative feature of this room are the curved walls on which stylized designs are traced in gold wire against a background of Chinese red. The bar itself is unusually shaped, with a concave curve and extends thwartships across the center section of the room.

Directly aft of the cocktail lounge is the ship's sophisticated "night club" known as the Marine Veranda.

As with all promenade deck public rooms, wide—almost room-high—Kearfott windows give an impression of space and airiness. The Marine Veranda, however, enhances this effect considerably through similar windows overlooking the swimming pool area in addition to those opening out onto the port and starboard open sections of the promenade.

As a secondary function, the Marine Veranda can be used for movies—a projection booth is centered in the port bulkhead while a screen unrolls from a recess on the opposite side of the room. For this purpose, not only the room's regular chairs are used, but also additional seating space is available in stackable metal chairs especially adapted for this purpose. They are portable, and stowed in lockers when not in use.

Approximately 3,000 square feet of open deck surround the built-in tiled swimming pool which is immediately adjacent to the Marine Veranda, and terminates the promenade deck facilities. The pool itself is 23 feet long by 18 feet wide, colorfully tiled in light blue and illuminated at night with underwater lights. Around the pool, slightly raised from the deck, is a wide strip of sand-grey tile. Within the pool itself, the walls, rather than rising flush, break about two feet from the top to form a deeply incised recess running around all four sides —designed to minimize splashing that results in most ships' pools from the motion of the vessel.

Passenger Accommodations

Passenger accommodations on the upper deck are almost entirely devoted to first class staterooms, most of which are "outside" rooms and all of which have toilet and bath or shower. A typical stateroom arrangement places a sofa-type Arnot berth against the outboard side of the room, while an upper and lower sleeping berth fold back, during the daytime, into recessed sections of the inboard bulkhead. All three berths are "made up" and out of sight when not in use. Although this type of accommodation is becoming increasingly familiar on postwar type ships, those on the PRESIDENT CLEVELAND differ from some of the others currently in use, since in the case of the sofa-bed, the sleeping surface and the sitting surface are entirely separate units.

Public spaces on this deck include a photo shop and dark room, a gymnasium, a massage room, and a tourist class lounge, smoking room and swimming pool. The latter is the trunked section of number seven hatch converted to this use while the ship is at sea.

Children's Playroom

Also on the upper deck is the children's play room, designed like a Disney set with its dominating feature a playhouse constructed along Hansel and Gretel architectural lines.

Perhaps most eye-catching from a child's point of view is the small electrically powered merry-go-round which will seat from four to six small fry. Along the outboard bulkhead is a not-very-accurate replica of the PRESIDENT CLEVELAND's sun deck. Sporting one stack with APL colors and insignia, a mast and a steering wheel, this ship-within-a-ship is "moored" both fore and aft to bollards and is boarded by a miniature gangway.

Amidship on A deck is the main embarkation entrance for first class. Fronting on this lobby are the purser's office, telephone exchange, broadcast and public address room, offices for the chief purser, chief steward and head porter, and a florist shop. Approximately one third of the passenger space on this deck is first class, a third tourist class, and the balance third class. Tourist and third class embarkation centers are also on this deck with their respective purser's offices and in the case of the third class, an interpreter's office. The after section of this deck houses the large and tastefully decorated third class lounge, while adjoining it on three sides is open promenade space for this class.

By far the greater proportion of B deck is given over to the function of eating, since here are located the elegantly ap-

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pointed main dining room, the smaller tourist dining room and the third class cafeteria and crew mess rooms.

C deck living quarters are entirely devoted to third class, being divided into 27 staterooms and an open berthing section.

Crew Accommodations

The total crew complement of the PRESIDENT CLEVELAND is approximately 340, of which 57 are deck department, 69 engine department, 11 staff department and the balance stewards and special. One of the unusual aspects of the ship is the amount of space given over to officer and crew quarters. On the basis of cabin space alone, and exclusive of public rooms, each crew member averages 0.237 more frame space than each passenger, if all classes are considered.

Aside from officer quarters on the boat deck, all crew spaces are located forward. On the Upper deck the unlicensed deck department is housed in the forward section with a maximum of four to a room.

All crew mess rooms are air conditioned but the most significant advance from the standpoint of crew comfort are the recreation rooms. Unlicensed personnel of deck, engine and steward's department have a separate air conditioned common room for off-hours relaxation, each with a combination radio-phonograph as well as card, game and library facilities.

In the hotel section of the vessel considerable use is made of Goodrich vinyl-tile, a new plastic that replaces rubber tiling formerly used as decking in uncarpeted enclosed spaces. This fire-resistant material has a reputation for toughness and durability far exceeding that of linoleum or rubber, is difficult to scar and cleans easily. One of its more interesting uses will be on the enclosed section of the promenade deck—which, instead of the traditional caulked wood, will be covered with the new vinyl-tile in a rich, dark blue. Several of the public rooms will also employ this type of flooring, including the dance floor of the Marine Veranda. Some of the chairs in this room will be covered in light-weight vinyl plastic.

All stateroom dressers as well as wood furniture surfaces in the public rooms have Formica tops—proof against both cigarette burns and alcohol stains.

Air Conditioning

Following the trend in new passenger construction, the ship will be extensively air-conditioned using Carrier equipment and ILG fans. In both first and tourist cabins this feature will be selective with individual units serving each stateroom. This type of air conditioning, which has been newly adapted to marine use, chills the air at a central source to about 50 degrees. It is then warmed up to suit individual tastes at its point of entry into each stateroom.

All public rooms, tourist class rooms, crew mess and recreation rooms and certain officer's rooms and offices are also air conditioned.

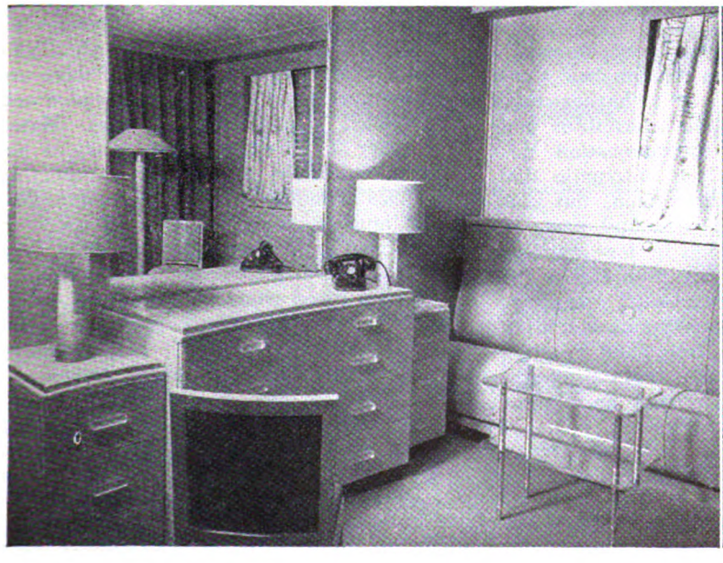
Safety Features

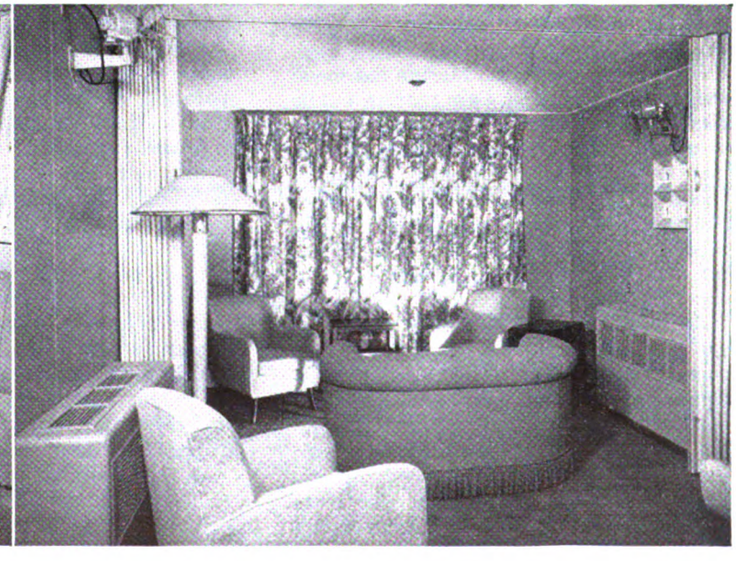
Safety, as well as luxury, has been stressed in the PRESIDENT CLEVELAND. Since she was primarily conceived as a wartime transport and since it is not inconceivable that she may ultimately see duty as such in some unforeseeable future, two completely separate and entirely self-contained engine rooms house her two General Electric (turbo-electric) motor units which supply a maximum of 20,000 horsepower. Each power unit comprises two Combustion Engineering boilers generating steam at 600 psi and 840 degrees F. for a turbo-generating set that has an output of 6890

PRINCIPAL CHARACTERISTICS OF PRESIDENT CLEVELAND

Length Overall	608′ 5¾″	
Length 32 Ft. Waterline	593′ 2 ″	
Length 29 Ft. Waterline	590′ 0 ″	
Length Bet. Perpendiculars	573′ 0 ″	
Beam molded	75′ 6 ″	
Draft subdivision	30′ 0 ″	
Draft scantling	32′ 0 ″	
Normal Shaft Horsepower	18,000	
Sustained Sea Speed	19 Knots	
Depth Molded Promenade Deck	61′ 6 ″	
Height Upper Deck to Promenade Deck	9′ 0 ″	
Height A Deck to Upper Deck	9′ 0 ″	at side
Height B Deck to A Deck	9′ 0 ″	
Height C Deck to B Deck	8′ 6 ″	
Crew including spares	352	
Passengers (about)	550	
Lightweight of ship including 700 tons fixed ballast	12,424	tons
Deadweight in long tons—		
Stores, passenger, crew and effects, and pools	545	
Fresh water	388	
Fuel oil	4,343	
Cargo oil	762	
Cargo oil heating water	114	
Refrigerated cargo	500	@ 70 cf/ton
General cargo	4,431	
Total Deadweight	11,083	tons
Total Displacement at 30′ 1⅞″ draft	23,507	tons

FIRST CLASS STATEROOMS ABOARD THE CLEVELAND . . . Left, the modern sleeping accommodations, the Arnot sleeper shown here in the daytime use. Dresser tops by Formica. Right, folding doors separate the veranda from the living room in one of the new de luxe suites, both sections of the room feature Carrier Weathermasters for individual stateroom air conditioning, large windows, instead of portholes directly to sea.





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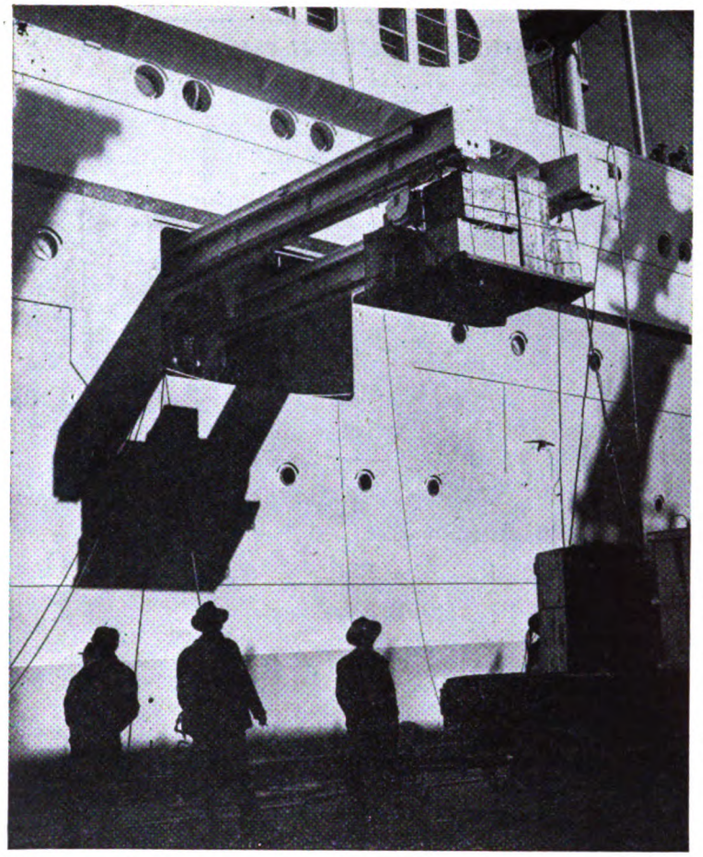

NEWLY-DESIGNED "SIPORTER" FOR CARGO HANDLING. An innovation in the design of cargo handling machinery is the side port loading and discharging crane, which is installed at No. 4 hatch and which will permit cargo to be loaded and discharged through side openings with the ship's own gear. The "Siporter" consists of two retractable parallel booms, each carrying 1 trolley, which are installed for athwartship travel in unison. A combination of the two booms is capable of handling three long tons. They are operated by a 10 HP motor, the travel of the trolleys by a 15 HP motor. Made by Lake Shore Engineering Company, Iron Mountain, Michigan, and sold by Carswell Marine Associates of New York and San Francisco. This is a radical deviation from previous methods of cargo handling as none of the cargo goes over the top decks.

K.W. at 3500 volts 3 phase 60 cycle at 3600 RPM and supplies this current to a synchronous propulsion motor normally rated 9000 shp at 120 RPM and with a maximum capacity for 10,000 shp at 124 RPM—3,610 volts.

Under normal operation, each engine room powers one of the twin screws. For wartime security purposes, however, cross connections (as in all P-2's) enable both propellers to produce 80% of normal speed from one power unit in case extensive damage makes either room unusable.

As a further security measure, the PRESIDENT CLEVELAND is a fourteen compartment ship, rendered so by her watertight bulkheads and a total of 38 sliding steel watertight doors—operated either electrically or manually from several points of control. Any two compartments can become completely flooded without endangering the buoyancy of the vessel.

Joiner work by Aetna Marine has made extensive use in first class marine public rooms and staterooms of an unusual type of partitioning. In these quarters, a two inch thickness of unburnable Fibreglas, enclosed by steel plates, renders all spaces not only fireproof but soundproof as well. Steel faced Marinite is used in partitioning the balance of the living quarters aboard.

As in the case of American passenger vessels built immediately prior to the war, the trend toward electrically (magnetically) operated firescreen doors has been continued. Dividing the ship into numerous fire zones—each with its own fire-fighting equipment—these doors can be closed either manually, or else electrically at the door itself, or from a master switch in the Fire Control room adjacent to the bridge.

Housed in the fire control room is a C-O-2 smoke detection, alarm and fire smothering system connected with the cargo holds, store rooms and similar spaces not occupied by passengers. Fire detection in passenger and crew quarters is based on a separate thermostat and annunciator system.

Although the capacity of the ship—both passengers and crew is 890 persons, the ten Welin lifeboats can accommodate a total of 934. Of these boats, two are motor propelled and radio equipped.

Other safety features as well as aids to navigation include a Sperry Mark XIV master gyrocompass with eight repeaters, a General Electric Radar unit, a Submarine Signal Co. echo depth sounder, Radiomarine Corporation of America radio direction finder and loran.

Radio Installations

Included in the complete radio installation supplied by the Radiomarine Corporation of America is a harbor type ship-to-shore telephone transmitter and receiver. Intraship communication depends not only on the automatic dial telephones in each stateroom, but also includes two systems of sound powered telephones from bridge to fore and aft docking points and from the bridge to the engine rooms. Westinghouse equipped public address systems connect with a broadcast and high frequency receiver which pipes music and radio programs to public rooms as well as crew mess and recreation rooms.

Cargo Features

Of considerable interest in maritime circles is the new cargo installation located in number four hatch—called a Siporter by its designers and manufacturers, the Lake Shore Engineering Co. The new installation enables cargo to be loaded and discharged through side openings with the ship's own gear. Fundamentally, the device consists of retractable parallel beams running athwartships, which, by means of a trolley mechanism, support and carry a traveling pallet. Hoisting blocks, operated through flexible steel cable, lower and raise the loaded pallet.

A 6,720 pound load can be handled through a complete cycle of operation from the hold of the ship to the pier, including necessary hooking and unhooking of the loading pallets in approximately 2½ minutes. This allows handling of cargo with the Siporter at the rate of 72 long tons per hour.

The new Siporter is located relatively (for sideport operation) high up on A deck level. On arrival of the ship at destination, the side port door is released and with the use of the trolley the door is lowered to the deck. A spud lock holding the boom is then released and the booms extended out (either port or starboard) to working distance over the ship's side. The spud lock is then reset and the Siporter ready to operate.

Operating stations are located at the hatch and at both port openings of the ship. One operator controls the load on the pier from the port opening, raising the load to deck level. The operation can be taken over by the operator at the hatch, and the load brought in and lowered into the hold. The travel of the trolley, however, can be handled by either operator.

While adaptable to similar type hatches, the Siporter is especially suited to the PRESIDENT CLEVELAND's number 4 hold, since this space will be used exclusively for refrigerated cargo where uniform packaging predominates. Net capacity of this hold (13 compartments) will total 33,482 cubic feet, capable of a sustained temperature of 5 degrees below zero. Since the ship's service spaces (12 compartments; 16,168 cubic feet) are immediately aft of this hatch on C deck, almost two thirds of the ship's stores will also be loaded by the Siporter.

In all, and including the Siporter installation, the PRESIDENT CLEVELAND has eight hatches. Six of these are the conventional over-all type loaded and unloaded through deck hatches. Hatch number 5, however, will consist of six cargo oil tanks capable of transporting 227,934 gallons or 762 tons of tung, cocoanut and edible oils. Number 7 hatch in its upper trunkway will do double duty as a tourist class swimming pool. A sloping and fitted wooden grating will serve as a false bottom over the regular steel tween-deck covering, to provide suitable pool depths while the ship is at sea.

The ship's three largest holds are forward (Numbers 1, 2 and 3) capable of carrying 179,244 cubic feet of the PRESIDENT CLEVELAND's 281,246 cubic foot cargo capacity (exclusive of cargo oils).

(Continued on Page 62)

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PRESIDENT'S COMMITTEE REPORT

A MODERN U.S. FLEET AND A VIGOROUS BUILDING PROGRAM

Three "reports", recently issued, vitally concern the American Merchant Marine. These are the report of the President's Advisory Committee on the Merchant Marine, the Marshall Plan Report, and the Harriman Committee Report. All of these reports will be dropped in the lap of Congress. Out of them the Congress must mold a policy.

The President's Advisory Committee Report envisages a strong, modern American merchant fleet and a vigorous shipbuilding program. The Marshall Plan Report proposes the reverse. The Harriman Committee Report falls between the two extremes.

Since these three vital reports will form the basis of maritime legislation enacted during the second session of the Eightieth Congress, the LOG presents on the following pages a concise review of their observations and recommendations.

‡ ‡ ‡

President's Committee Report

The report of The President's Advisory Committee on the Merchant Marine introduced the summary of general findings as follows:

"The Committee is convinced that a modern, efficient merchant fleet, and an effective and progressive shipbuilding industry are necessary economic adjuncts to the peacetime economy of the United States despite the unavoidable present necessity of Government financial aid to maintain them.

"Even if this were not true, the Committee faced the inevitable conclusion that such a merchant fleet and shipbuilding industry are indispensable to national security and would have to be maintained even should there be no other benefits accruing. . . .

"Such is the importance of this security factor that the Committee believes that much more active prosecution of the purposes of the 1936 act than has been shown in recent months must be carried on, and the recommendations here detailed are for that purpose. . . .

"The recommendations of this report seek to provide a means of avoiding further repetitions of these periodic breakdowns. The fact that this nation poured more than two and one-half billions into building merchant ships in World War I, and a total of 12 billions for the same purpose in World War II, should be evidence enough that the country cannot abandon shipbuilding or ship operation in time of peace. *Shipbuilding skills and the know-how of ship operation are essential national assets and must be preserved."*

Summary and Recommendations

The President's Advisory Committee on the Merchant Marine recommended the following:

(1) **Reorganization of the Maritime Commission**—The Maritime Commission be reorganized into: "(a) A Maritime Administration under a single administrator, who, in time of peace, should report to the Secretary of Commerce and who should be charged with the executive and operative functions presently assigned to the Maritime Commission; and (b) a Maritime Board composed of five Commissioners set up in the 1936 act in whom would be vested the quasi-legislative and the quasi-judicial functions for which the Maritime Commission is now responsible."

(2) **Construction Financing**—"The 1936 act provides for precise and theoretical determination of the amount of the construction-differential subsidy. The Committee finds that the uncertainty of industrial conditions, both at home and abroad, prevents a satisfactory determination of this differential. . . . The pressing national security needs for ships and shipbuilding, lead the committee to recommend, in view of these practical difficulties and factors, that during the next three years, at least, shipbuilding contracts be placed at the maximum construction-differential subsidy of 50% permitted by the 1936 act and which was used under congressional approval during the recent war period."

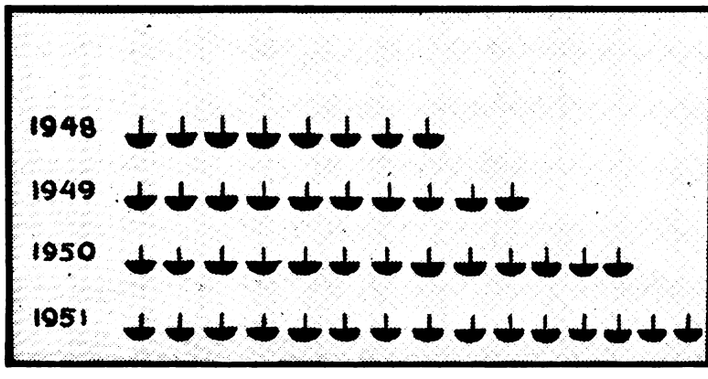
(3) **Building Program**—"The estimated mobilization requirements of the National Military Establishment for troop transports together with our great deficiency in passenger-carrying ships for peacetime service, indicate a program of ship construction of about 46 passenger-carrying vessels over the next 4 years, and the inception of a freighter and tanker program."

(4) **Depreciation and Reserve Funds**—"The Committee thinks that a . . . satisfactory course in accord with the national policy to foster shipping would result from extending to the unsubsidized companies in foreign trade the privilege of the provisions of section 607 of the 1936 act as to the capital reserve fund and the special reserve fund now applicable only to subsidized lines."

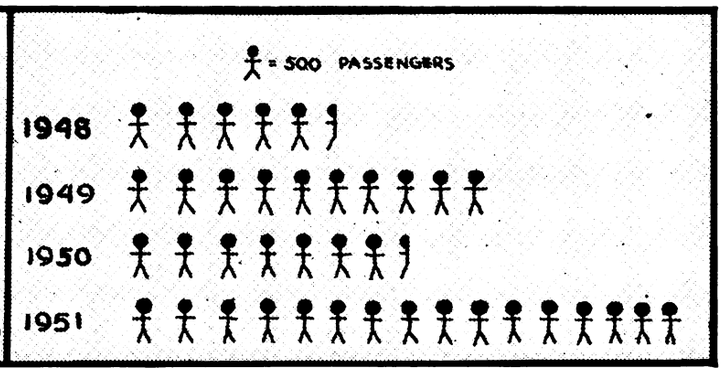
(5) **New Ships for Domestic Services**—The Committee recommended the following steps, listed in order of importance, for the domestic shipping industry: (a) Early settlement by the Interstate Commerce Commission of the coastwise and intercoastal rate petition of the water carriers. (b) The Government sponsor a cooperative effort on the part of shipping companies, shippers, ship designers, maritime labor, port authorities, and interested Government departments to reduce cargo-handling costs. (c) A limited number (approximately 250) Liberty, Victory, and smaller ships be sold to domestic ship operators on a competitive bid basis, with the condition that they can be used only in domestic services. (d) The Government build and place under private operation on a negotiated basis necessary passenger vessels to adequately service the noncontiguous territories of the United States.

(6) **Operating Personnel**—The committee offered several broad considerations on the subject of maritime personnel as follows: (a) "Ways must be found to assure efficiency, continuity, and reliability of service. . . ." (b) "The Maritime Commission's training program should be continued for licensed and unlicensed

RECOMMENDED PASSENGER LINER PROGRAM
Number of Ships
(Total 1951—46 ships)



Recommended Passenger Liner Program
Passenger Capacity
(Total 1951—20,345 passengers)



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personnel. . . ." (c) "To provide for the well-being and assistance of American seamen in foreign ports, service similar to that now being furnished by the United Seamen's Service, Inc., should be continued under the joint sponsorship of ship-operating companies and of maritime employees. . . ."

(7) **Distribution of Ship Construction**—"It is implicit in a program that aims to encourage a vigorous shipbuilding industry that the relatively small volume of tonnage to be built in the near future not be concentrated in one or two yards. Not only prices bid but the current work load, the availability of facilities, geographic location, and other conditions will have to be taken into account in determining suitable distribution."

(8) **Progressive Replacement of War-built Tonnage**—"Avoidance of block obsolescence can be accomplished most effectively by establishing a relatively uniform, progressive replacement program. Such a program will also serve best to assure maintenance of the nucleus of specialized knowledge and skills in the shipbuilding industry. . . ."

"It may be profitable to down grade some of the better ships to be replaced from more competitive to less competitive American-flag services; but the less effective ships will require disposal. These ships can (a) be turned in for credit on new tonnage and be placed in the reserve fleet, (b) be sold foreign, or (c) be sold for scrap."

(9) **Security for Purchase Price**—To encourage private capital to participate in the construction of large, fast, passenger vessels specially designed for a particular route, the committee recommended "that the Government waive its right to sue for a deficiency judgment for the purchase price, in the event that cause of default by the purchaser is due solely to the closing of the route which the vessel was designed to serve and that the vessel is not adaptable to another commercial route."

(10) **Sea-air Transportation**—Although the committee did not investigate the sea-air controversy, it heard representations on the subject and stated: "On the basis of the testimony it has heard . . . the committee recommends that a thorough study be made to determine (1) whether air-mail contracts payments are or are not being used unfairly to depress rates below reasonably compensatory levels for the air lines carrying passengers in competition with steamship companies; and (2) whether the development of both air- and water-transportation services so essential to national defense would be furthered or retarded by permitting coordinated operations."

DEAR MR. PRESIDENT

November 1, 1947

The President,
The White House, Washington, D.C.

Dear Mr. President: The accompanying report of your Advisory Committee on the Merchant Marine takes present-day cognizance of two fundamental considerations presented time and again by illustrious committees that have studied the subject over the years. One is that a modern efficient merchant fleet and a progressive shipbuilding industry are indispensable to national security. The other is that they are also sufficiently essential adjuncts to our peacetime economy further to justify the Government financial aid that is necessary to maintain them. Two world wars have abundantly shown that we cannot do without them.

The Committee would add another consideration that it regards as basically sound and pertinent to the newer conditions of today. This is the conviction that the American people believe America should lead in shipping as it is expected to lead in other world affairs. So genuine is this belief, the Committee suggests, that the American people wish to see not the cheapest but the best job done; that they look for a program of long-range continuity, not one of piecemeal proportions; and that in such a merchant marine as our national policy envisages, there will be both pride of possession on the part of the taxpayers and pride of performance on the part of those who serve in American ships. . . .

In submitting our report, we desire to express our appreciation of your confidence in asking us to consider this problem so important to the Nation. We sincerely hope that our findings and recommendations will prove to be of assistance to you in solving it.

ANDREW W. ROBERTSON,
JAMES B. BLACK,
E. L. COCHRANE.

Respectfully submitted,
K. T. KELLER, *Chairman,*
MARION B. FOLSOM, *Vice Chairman,*

Observations of the President's Committee

Some of the more significant observations made by the Committee in its report are as follows:

(1) ". . . it appears to the committee that the organization structure of the Maritime Commission as set up in the Merchant Marine Act of 1936 is wholly inadequate for the efficient conduct of the multitude of diverse activities for which the Maritime Commission is now responsible. *The deficiencies of the statutory organization for administrative action—for getting things done—are regarded by the Committee to be the most serious obstacle standing in the way of the development of the merchant marine of this country.*"

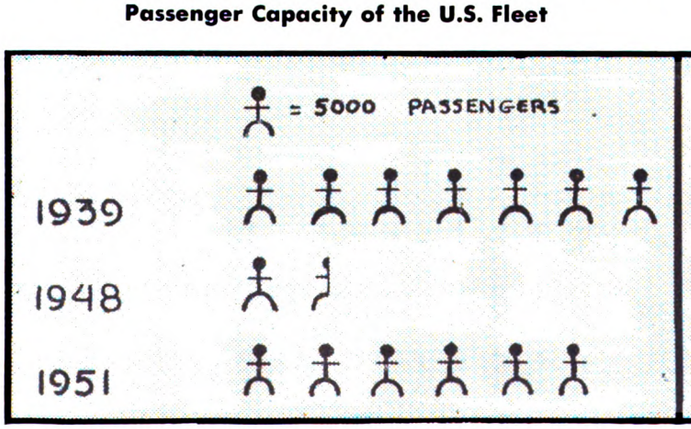
(2) "While some American-flag operations have been carried on successfully without aid from the Government, high standards, established by legislation and by public policy, have put American ship operators at a substantial disadvantage with foreign competitors—a disadvantage that has not been offset by operating economies or other improvements."

(3) ". . . serious difficulties confront the independent general-cargo and passenger-ship operators in the intercoastal, coastwise, and in certain of the noncontiguous services. The failure of ships to enter these services is complicated by a low-rate structure, by the lack of suitable ships to replace war losses, by high operating and port costs, and by the high cost of building new tonnage."

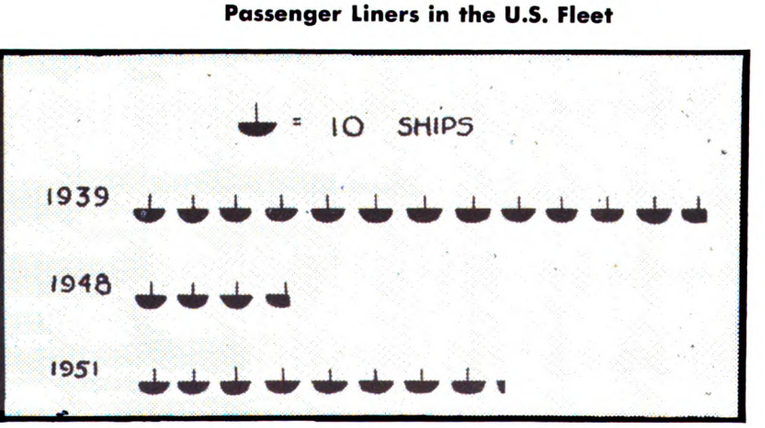
(4) "The committee has found that while foreign shipyards are heavily engaged in constructing modern and efficient ships that will soon be competing with ours for world trade, the American shipbuilding industry is rapidly approach-

(Continued on Page 33)

Passenger Capacity of the U.S. Fleet



Passenger Liners in the U.S. Fleet



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THE MARSHALL PLAN REPORT

STEEL FOR EUROPE'S SHIPBUILDING

The European Recovery Program, or Marshall Plan, evolved by the sixteen participating nations at Paris and hashed over in Washington, dealt extensively with shipping. The report on Maritime Transport was introduced as follows:

"Shipping is of fundamental importance to the economy of the participating countries. A high proportion of their foreign commerce is necessarily seaborne. Moreover, for some of the countries the provision of international shipping services is of great importance to their balance of payments. In 1938 the world looked to the participating countries for about 60 percent of its tonnage.

"The merchant fleets of the participating countries suffered heavy war losses. Over 22 million gross tons of their ships were sunk, representing 62 percent of the tonnage owned in 1938. The replacement of these lost vessels and those which have grown old or suffered excessive wear and tear from their wartime use represents a major task for the participating countries.

"To carry out this task the participating countries look naturally to their own shipbuilding yards or to those available to them in other of the participating countries. The shipbuilding capacity in these countries represented in 1938, 75 percent of the total shipbuilding capacity of the world. The whole of the shipbuilding requirements of the participating countries (as well as much of the shipbuilding required for other flags) were met from this capacity. So important, however, is it to get prompt ships that most of the participating countries have been compelled to spend large sums in dollars on acquiring ships built in the United States for war purposes and available for sale abroad. Up to date it is estimated that the value of such ships purchased by the participating countries is some 500 million dollars.

"As a result of these efforts good progress has been made in the reconstruction of merchant fleets."

Summary of the Marshall Plan Report

The summary of the Maritime Transport Committee contained in the published report is as follows:

(1) "The process of reconstruction of the merchant fleets of the participating countries is in progress so that by 1951 these fleets should be adequate to cover the services normally to be performed by shipping under the flags of these countries. This is on the assumption that shipbuilding materials are available in the yards as and when required to ensure prompt realization of building programs.

(2) "Meanwhile, until this position is obtained, the participating countries will remain dependent on a substantial but diminishing volume of dry cargo shipping services from dollar sources, estimated at 10.3 million tons in 1948, 7.2 million tons in 1949, 4.5 million tons in 1950, and 2.2 million tons in 1951.

(3) "Some part of the expanding demand for tankers must be met by tonnage other than that of the participating countries. The need of these countries for such tonnage during the period is estimated at 1.1 million tons in 1948, 1.7 million tons in 1949, 2.2 million tons in 1950, and 2.8 million tons in 1951. In each year this is less than the United States oil industry would be expected to provide in the normal course for the transport of its trade to participating countries and Western Germany.

(4) "The cost of procuring these shipping services if paid for in dollars at rates now current is estimated at 570 million dollars in 1948, 460 million dollars in 1949, 365 million dollars in 1950, and 310 million dollars in 1951."

Observations on Maritime Transport

The technical report of the Committee of European Economic Recovery dealing with shipping reached the following conclusions:

(1) The participating countries have seven million deadweight tons less of dry cargo shipping now than in 1938. Their tanker fleets are only 600,000 deadweight tons less than 1938.

(2) Building dry cargo ships of "liner and specialized and smaller types" is necessary to properly balance the fleets of the Sixteen Nations.

(3) Obsolescence is a larger factor now than in the prewar fleets of the participating countries.

(4) The construction of large passenger liners is "an important part of the task of the participating countries."

(5) "In spite of the disappearance of the prewar German fleet . . . the participating countries will own more tonnage overall by 1951 than in 1938."

(6) The participating countries expect to be called upon to perform a greater part of "world-wide shipping services" through the elimination of the Japanese and German fleets.

(7) "The building necessary to achieve the planned development will be mainly carried out within the participating countries. As regards second-hand ships, the forecasts presuppose that certain United States tonnage additional to that already delivered will be available." The tonnage expected amounts to 3 million deadweight tons at a dollar expenditure of 300 million dollars.

(8) The effective prosecution of the construction programs depends upon the ability of the Sixteen Nations to procure adequate supplies of shipbuilding materials, "especially steel."

(9) "The total tonnage to be built in foreign yards is 6 million deadweight tons, and the cost stated in dollars might be put at some 1,250 million (one and a quarter billion) dollars, mainly to be spent in the participating countries."

(10) The Sixteen Nations estimate dollar shipping services over the period 1947-1951, based on average 1947 North Atlantic freight rates, to be 1.8 billion dollars.

(11) "World tanker resources include war-built tankers now owned by the United States Maritime Commission and it is assumed that such tankers will continue to be available as required."

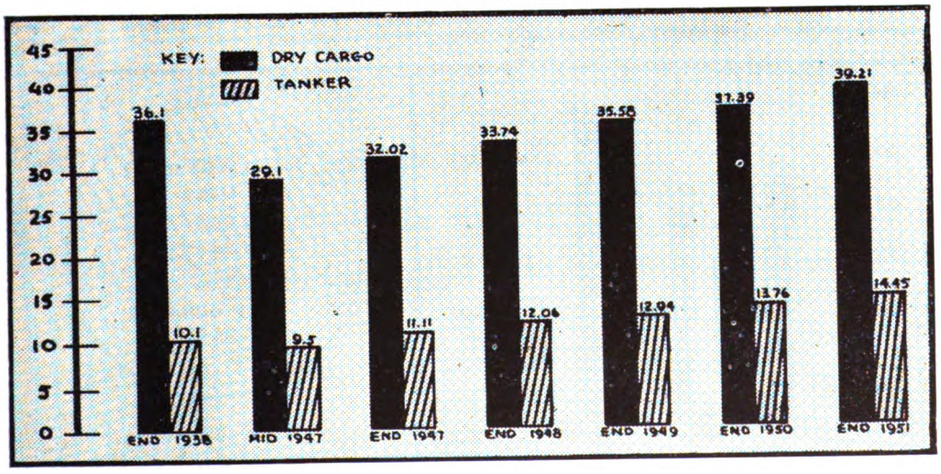
(See page 33 for additional charts)

MARSHALL PLAN NATIONS

Austria	Luxembourg
Belgium	Netherlands
Denmark	Norway
France	Portugal
Greece	Sweden
Iceland	Switzerland
Ireland	Turkey
Italy	United Kingdom

PROJECTED FOREIGN FLEETS UNDER MARSHALL PLAN

Total of 16 Participating Nations



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HARRIMAN COMMITTEE REPORT

WAR-BUILT SHIPS FOR EUROPE—STEEL FOR THE U.S.

The Harriman Committee Report, officially called the President's Committee on Foreign Aid Report, has been accepted by the steamship industry as a thorough analysis of the problem of shipping in the Marshall Plan. The section of the Harriman Report dealing with shipping repudiates much of the plan advanced by the sixteen participating nations and makes its own recommendations as to what should be done. The Ocean Shipping Section opens as follows:

"There is no shortage of dry cargo ships to carry any world commerce that is likely to develop under an aid program for the next several years, but the tanker position may become quite critical by 1951 if appropriate action is not taken.

"In face of the present world surplus of dry cargo tonnage the sixteen nations represented at Paris have indicated their intention to build some 15½ million deadweight tons of shipping in the next four years. This will require very considerable quantities of steel and other materials in short supply as well as a good deal of labor. At a time when steel for urgently needed inland transport equipment—to mention but one item among many—is very scarce, the wisdom of a shipbuilding program as large as that proposed seems to us open to serious question. The Paris countries defend the program on the ground that the types of vessels currently in surplus are not suitable for the purposes for which their new construction is intended. This is undoubtedly true in part, but in an emergency period like the present they perhaps could manage with some tonnage not ideally suited to their purposes in the interests of conserving resources for the production of what from a world point of view are most desperately needed items.

"The United States Government has in its possession hundreds of ships that are not now being used and that will never be needed by our merchant marine under the most optimistic assumptions about its future. At present under the sales policy of the Maritime Commission very few additional vessels from this war-built surplus are being offered to foreign countries. This policy should be changed to permit foreign sales whenever we are satisfied that they will be accompanied by commensurate reductions in European construction programs. On the other hand, further sales of dry cargo ships abroad should not be made when such sales, instead of substituting for foreign construction, will merely add to the foreseeable future surplus of tonnage. The United States needs an active merchant marine for national defense, and we must not create conditions in which that merchant marine cannot survive."

Recommendations

The Harriman Report makes the following recommendations:

(1) Congress extend the authority of the Maritime Commission to bareboat charter dry cargo vessels at least one more year beyond the existing deadline of March 1, 1948.

(2) Maintain a working reserve of 100 or more Liberty ships "to promote the maximum flexibility in handling the Marshall Plan bulk cargoes and to avoid the cost of moving bulk carriers in and out of the laid-up fleet."

(3) Sale of our surplus war-built vessels to the Sixteen Nations "contingent on a commensurate reduction in the forward construction programs in Europe."

(4) The dry cargo construction program "be carefully weighed in relation to the steel program and the over-all question of financing the recovery of the Marshall Countries."

(5) "The Government-owned Liberty tanker types should be transferred to the Sixteen Nations under the Marshall Plan. As an interim measure, Congress should take steps necessary to permit immediate transfer of these tankers."

(6) Congress should "extend the general agency operation beyond March 1, 1948, in order to meet any possible tanker operating contingency."

(7) "The foreign tanker construction programs should be encouraged at the expense of dry cargo construction programs."

(8) To stimulate shipbuilding in U.S. yards, "American oil companies should be encouraged to inaugurate new construction programs for large, fast tankers" to release older tankers for foreign sale.

Observations

The Harriman Report makes the following observations on the Paris Plan of the Sixteen Nations.

(1) "The limited financial savings (to be gained by transferring U.S. ships to foreign nations for operation) are not sufficient to justify the drain on United States resources for national defense which such transfers would involve."

(2) The steel required to meet the program "represents more than one half of the proposed imports of steel from the United States."

(3) "In view of the preoccupation of the European yards with repair and reconversion work, and in view of the slow pace of the work on the shipping ways, the realism of the Paris target is debatable even on the assumption of a liberal supply of American steel."

(4) "Neither in Paris nor Washington have the European maritime representatives shown much disposition to look upon the next four years as an emergency in which means must be contrived to make do with the facilities we have at our disposal rather than to embark on longer term building programs."

(5) "The dollar freight expenditures on United States liners must be removed from the area of discussion if we are to adhere to our policy of maintaining a merchant marine consistent with our minimum national defense needs."

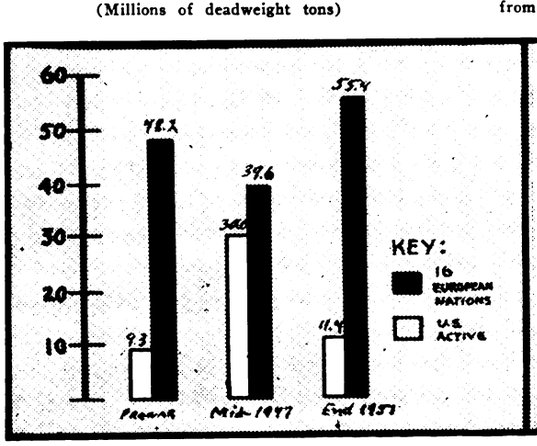
(6) "In considering the possibility of dollar freight savings through the transfer of additional American vessels to the Sixteen Nations . . . even on the assumption that such transfers were to be outright grants in aid, a maximum of 75 per cent of the gross dollar freights would be saved by the participating nations. . . . To the American taxpayer the dollar savings would be even less. On the transferred vessels we would lose income taxes now collected by the Treasury, charter hire now collected by the Maritime Commission and earnings recaptures also collected by the Maritime Commission under the terms of the bareboat charter."

(7) "It is pointless for Europe to be building up a world surplus of vessels at this juncture. It would be equally pointless for us to transfer large numbers of dry cargo vessels during the period of European surplus build up. But, if the Sixteen Nations could be induced

(Continued on Page 33)

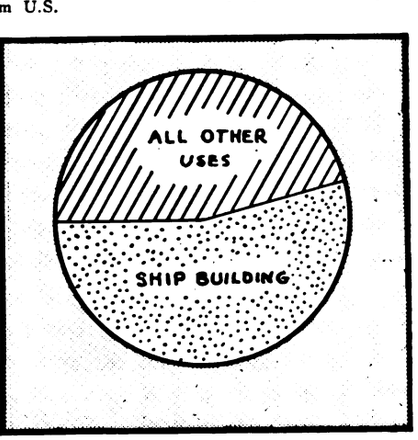
Merchant Fleets—Dry Cargo and Tankers

(Millions of deadweight tons)



Where Our Steel Exports Are Going

The shipbuilding program of the 16 European nations represents over half of the proposed steel imports from U.S.



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Program for Construction of Passenger-carrying Vessels

(President's Committee Report)

Route or service	Number of ships	Approximate gross tons per vessel	Approximate passengers per vessel
For fiscal 1948:			
New York to Mediterranean	3	21,000	675
Round the World	5	13,500	180
Total, 1948	8	.....	...
For fiscal 1949:			
New York to Channel ports	1	50,000	2,000
New York to east coast South America	2	18-20,000	600
Gulf coast to east coast South America	1	12,000	230
East coast United States to South Africa	2	8,000	300
Seattle to Alaska	2	6,000	300
Pacific coastwise (Los Angeles to San Francisco)	2	18,000	350
Total, 1949	10	.....	...
For fiscal 1950:			
New York, Boston to London	4	10,000	160
New York to Baltic ports	2	13,000	150
West coast to Pacific	2	18-20,000	600
New York to Puerto Rico	2	7,500	350
Atlantic coastwise	3	18,000	350
Total, 1950	13	.....	...
For fiscal 1951:			
New York to Channel ports	1	50,000	2,000
New York to Hamburg, Bremen	1	24,000	1,000
New York to east coast South America	1	18-20,000	600
West coast to Orient	2	22,000	800
Seattle to Alaska	2	6,000	300
Pacific Islands	2	4,000	250
East coast to West Indies and Gulf	4	6,000	300
East coast to Caribbean	2	9,000	350
Total, 1951	15	.....	...
Grand total, 1948-51	46	.....	...

President's Committee Report

(Continued from Page 30)

ing almost complete inactivity. . . . Unless new contracts are placed in the immediate future, the American shipbuilding industry will suffer such a loss in its technical and engineering staffs and in its skilled labor personnel that years will be required to restore it to a basis of substantial and effective operation."

(5) "Uncertainty as to national maritime policy has been one of the important factors deterring investments in maritime ventures. The Committee believes that given the prospect of fair and reasonable remuneration and assurance of consistency of Government policy, new private capital can be brought into this field of enterprise."

(6) "In the furtherance of the policy of private ownership and private operation of the merchant marine, the Committee believes that consistent with national security considerations preference should be given to the opinions and desires of the operating companies as to the designs to be provided. The prospective owner's interests and requirements in new vessels should likewise be guarded in the contract, in development of working plans, and in the inspection during actual construction and outfitting."

(7) "The passenger capacity represented by this program (construction of 46 passenger liners over the next 4 years) in ships to be completed by 1953 is less than 40 percent of the total passenger traffic which the Department of Commerce estimates will be traveling overseas by water in 1950. Its total approximate cost, based on the Maritime Commission's estimates at present price levels, would range between $500,000,000 and $600,000,000, or average about $150,000,000 a year. A considerable part of this initial outlay should be recovered through the sale of the ships to private companies."

(8) "The committee feels that it is as important that the Government counsel, advise, and assist private shipping in overcoming the obstacles which confront it as it is that the Government regulate the industry to protect public interest."

(9) "The size and general soundness of the shipping and shipbuilding industries are dependent inevitably upon one another. Neither can maintain itself in a healthy condition if the other is lacking. The bond between the two and the one assurance of continued adequate strength in both is a stable flow of building contracts from which results a constant level of employment in one and the maintenance of competitive efficiency and technological progress in the other."

Harriman Report

(Continued from Page 32)

to curtail their new vessel construction commensurately with an agreed transfer of war-built dry cargo vessels, we would be making a major overall contribution to the Marshall Plan.

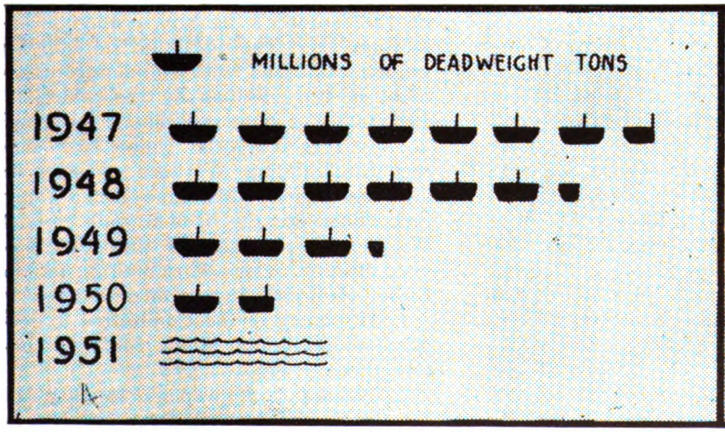
(8) "If all the available special war-built types (of tankers) could be transferred to the Marshall countries, either by sale or by attractive bareboat charter arrangements, approximately 600,000 deadweight tons would be added to the Paris tanker projection, and the Marshall Nations would be saved approximately $100 million over the four year period."

(9) "With the concurrence of the military authorities, certain of our older tankers or even T2 types might be released for transfer to the Sixteen Nations as the result of a program of new construction by the American oil companies in American yards. Some American oil companies have drawn up plans for new, large, fast tanker types. Since the manning scales on larger, faster tankers would not be much different from the T2 manning scale, a new building program of this type might be a partial answer to America's operating cost problem in relation to foreign competition. If 500,000 tons could be transferred in this way, a savings of about $75 million might be effected in the latter part of the Marshall Period.

(10) "Another possibility would be to increase the tanker construction program of the Sixteen Nations by about 1,400,000

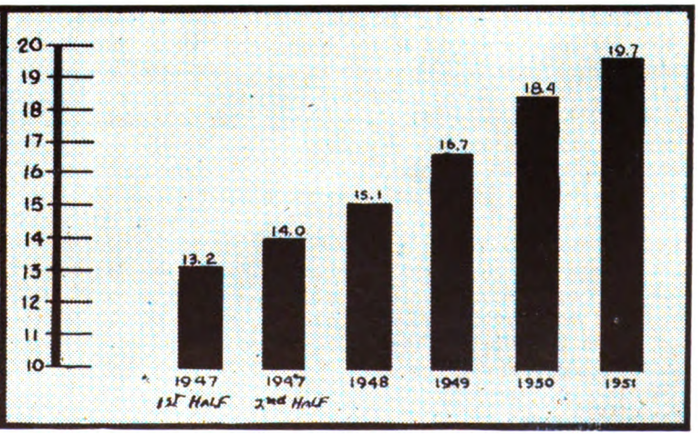
(Continued on Page 52)

U.S. Flag Shipping Participation in the Marshall Plan



Tanker Tonnage Needed by 16 Nations Under ERP

(Millions of deadweight tons)



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WASHINGTON Reporter

By The LOG'S Own Correspondents

U.S. Shipping Promised Share In Marshall Plan

A concerted drive by all segments of the shipping industry has culminated in securing an agreement from Senate leaders that there shall be a provision in the Marshall Plan, or in any long-range relief plan, for American ships to carry a guaranteed minimum of fifty percent of all relief cargoes. An attempt to incorporate a similar feature in emergency stop-gap legislation was abandoned in view of this greater concession.

Both labor and management joined in the drive to establish the role U.S. shipping is to play in the Marshall Plan, with the Masters, Mates and Pilots of America being particularly active in pressing for Congressional recognition of this role.

The industry is also united in its opposition to any future ship sales, charters or gifts to foreign nations under the Marshall Plan. The unions are opposed because further disposal of American vessels to foreign merchant marines means less jobs for American seamen. U.S. shipowners point to the fact that foreign merchant fleets are rapidly approaching their pre-war size. Before the war the 16 Marshall Plan nations had fleets totalling a little over 46 million deadweight tons. Today they possess approximately 41 million deadweight tons of shipping; and by the end of 1951 projected construction will bring this figure to a new high of about 54 million deadweight tons.

A coordinating committee of the U.S. Chamber of Commerce is now working on reports submitted to it by other committees, each dealing with a separate aspect of the Marshall Plan. When the work of the coordinating committee is done an over-all report on the Marshall Plan will be issued. It is believed that the International Transportation Committee of the Chamber has recommended a strong stand against disposition of U.S. vessels to foreign countries.

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Industry Offers Assistance In Industrial Mobilization

Full cooperation of the shipping industry has been promised in the industrial mobilization planning program of the Munitions Board. In a letter to Rear Admiral R. W. Paine, USN, the industry offered to assist in a survey of U.S. merchant shipping, and expressed its gratification that such a project was being undertaken by the board.

Plans formulated by the board call for the creation of an interdepartmental committee at the government level. This committee will work under the board's supervision on a plan for establishing a war reserve of merchant ships.

"We take it," the industry letter said, "that such a study will include not only vessels manned and in active operation which would be called upon to resist the impact of such an emergency but such additional vessels held in inactive or laid-up status of size and characteristics suitable for overseas logistical support. These latter vessels would, of course, be necessary to bridge over the time and to replace casualties until our shipyards could be rehabilitated and begin delivery of additional such vessels in volume."

Interest of American shipowners is centered upon the Munitions Board survey not only from a standpoint of logistical support in the event of an emergency, but also from an economic standpoint. What the board deems an "adequate reserve" of merchant ships may well influence policy in regard to ship sales and transfers to competing foreign merchant marines.

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Maritime Commission Fate In Balance

Although the ultimate fate of the Maritime Commission is still hanging in the balance, the very least that can be expected is a major shakedown and rebuilding of the existing structure.

Milder critics of the Commission suggest a transitional reorganization by gradually strengthening and building upon the present framework. Others call for more radical change in varying degrees of extremity.

The President's Advisory Committee on Merchant Marine has recommended that the Commission be reorganized into a Maritime Administration under a single Administrator, and a Maritime Board composed of the five Commissioners.

The Administrator would rank as an Under Secretary charged with executive and operative functions now assigned to the Commission, and would have access to the President and Cabinet through the Secretary of Commerce. The Maritime Board would be vested with quasi-legislative and quasi-judicial functions.

Going a step further other proposals contemplate creation of a Cabinet post for a Secretary of Transportation, under whose jurisdiction the Maritime Commission would be placed.

Identical bills now under consideration by Senate and House Committees call for the establishment of a new executive department to be known as the Department of Transportation under a Secretary of Transportation. These bills provide for transfer to the new Department of the Maritime Commission, Interstate Commerce Commission, Office of Defense Transportation, Inland Waterways Corporation, Civil Aeronautics Board, Civil Aeronautics Administration, Office of the Administrator of Civil Aeronautics and the Weather Bureau. The bills, H.R. 4595, introduced by Representative Karl Stefan, Rep. of Nebraska, and its Senate counterpart, S. 1812, introduced by Senator Homer E. Capehart, Rep. of Indiana, empower the Secretary to direct and supervise the functions of the Department and to establish general policies and programs.

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Advisory Committee Report "Encourages" Management; "Disappoints" Labor

The report of the President's Advisory Committee on Merchant Marine has been received with general satisfaction by shipowners and shipbuilders. Labor, on the other hand, although agreeing with the Committee on over-all objectives, expressed its "disappointment" with the specific program recommended for implementation of these objectives, and found the long-range program to be "gravely deficient" in many respects.

Speaking for the ship operators, the National Federation of American Shipping stated that the industry is "greatly encouraged" by the report of the President's Advisory Committee.

There is not, however, entire unanimity of opinion among the operators on all aspects of the report. Particularly headed for criticism by some shipowners is the Committee's recommendation that a number of surplus vessels for use in the domestic trade be offered for sale on a competitive-bid basis. They feel that such a change in procedure would place them at a disadvantage. Another potential bone of contention is the report's proposed reorganization of the Maritime Commission. There are obvious drawbacks to having a Maritime Administrator ranking as an Under Secretary with access to the President and Cabinet only through the Secretary of Commerce. It is felt that any reorganization plan should have provision for *direct* access to the President and Cabinet. The shipowners, generally, regard the report of the President's Advisory Committee as a step forward in the right direction; they merely recommend a greater stride.

H. Gerrish Smith, President of the Shipbuilders Council of America, summed up the views of his industry by declaring that the Committee's recommendations for a ship construction program "point the way out of present serious difficulties in the interest of national security and of the country's healthy economic expansion. . . ." The moribund shipbuilding industry is faced with complete curtailment of its activities by the middle of 1948 unless a new program is launched.

The CIO's Industrial Union of Marine and Shipbuilding Workers of America and the National Maritime Union found less cheer in the Committee's report. William Green, head of the IUMSWA, cited three major shortcomings of the Keller Committee's recommendations:

1. Hesitancy of the Committee to recommend additional funds for ship construction.

2. Placing of the proposed starting date for ship construction too far in advance.

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3. Lack of support by the Committee for construction of trans-Pacific liners.

The union's chief expressed his dissatisfaction with some sections of the report which would place the shipbuilding industry on a near "poverty" level. He said that the proposals for a fleet modernization program would require a future continuing work force at virtually the same low level as in 1936.

Extension of M.C. Authority Asked

President Truman's message to Congress recommending that authority be extended to the Maritime Commission to operate, sell and charter government-owned vessels which were built during the war to June 30, 1949, has been considered in some quarters to be ill-timed. It was felt that as the Commission's authority does not expire until February 29, 1948, the request should have waited until Congress convenes in January for its regular session, without the immediate pressure that is on the present Congress.

In his message the President said that, "Over 1,200 dry-cargo vessels are now chartered by American citizens to the Commission. The bulk of this fleet is devoted to carrying vital relief cargo, chiefly coal and grain exports. Its continued operation will be essential in furnishing aid to foreign countries during this winter. Other portions of this chartered fleet are devoted to essential coastwise and intercoastal services".

The President pointed out that under its present authority the Maritime Commission, through general agents, is now operating emergency passenger vessels and tankers, and that continued operation of passenger vessels is necessary if essential passenger needs are to be met.

"While the number of tankers operated by the Commission is being steadily reduced as tankers are sold under the Ship Sales Act, those which remain unsold must be kept in operation to assist in averting a serious world-wide shortage of petroleum.

Among other questions concerning the maritime industry which will require new legislation in the near future, the President mentioned the shipping requirements of the European recovery program, and the long-range requirements of our own merchant marine.

Industry Asked To Adopt M.C. Educational Program

The Maritime Commission has suggested that the shipping industry take over its educational program. In a letter to the industry, Vice Admiral William Ward Smith, chairman of the Commission, offered to release the Commission's list of inquirers and to render all assistance possible in the event that the industry decided to take over the educational program.

The proposal is now being considered by the industry which will decide whether to appropriate the necessary funds.

Drastic curtailment of the Maritime Commission's activities has virtually brought a halt to the educational program which it established in the fall of 1945. Requests for educational material received daily by the Commission are currently being filled with such left-over booklets, pamphlets and charts as are still available.

Vice Consuls Confer With Shipping Officials

Under an agreement the industry has reached with the State Department newly appointed vice consuls receive letters of introduction to officials of steamship companies for consultation with them prior to assuming their new duties. The new appointees now visit with officers of the shipping companies which service the area in which their new post is located and discuss typical shipping problems which are likely to be met in that area.

Such subjects as local regulations, crew questions, volume of passenger traffic, principle cargoes handled, and other matters relating to shipping, are discussed so that the vice consul may become better acquainted with the nature and problems of the industry.

NFAS Representation at International Conferences

The National Federation of American Shipping has reached an informal agreement with the State Department whereby the industry will be kept informed on various questions relating to shipping which arise from time to time, and the industry, in turn, will be asked for information and recommendations by the Department.

The Federation has already been advised by the State Department that it will be permitted to nominate a representative with delegate status at two future international conferences. The first of these will be the meeting of United Nations representatives at Geneva on February 19th to form an Intergovernmental Maritime Consultative Organization. It is contemplated that this body act in a consultative and advisory capacity on technical matters, discriminatory shipping policies and practices which cannot be dealt with on a lower level, and shipping problems which might be referred to it by the United Nations organization. No decisions made by the group would be binding upon any of the members until ratified under the procedures prevailing for such action in the countries of the various members.

The second conference at which the industry is to be represented will be the Safety at Sea meeting to be held in London on April 19th. Technical problems arising at this conference may be ultimately referred to the Intergovernmental Maritime Consultative Organization.

Disagreement on MC Training Program

The Maritime Commission's proposed training program for 1948 has met with a varying degree of acceptance from the steamship industry.

American steamship owners on the Atlantic and Gulf coasts fully support the Commission's program, which they feel is justified in view of present employment conditions existing on these coasts and the nebulous future of American shipping.

Pacific shipowners, on the other hand, are facing employment conditions on the west coast where there is a surplus supply of sea-going personnel. Although not openly opposed to the training program, they have questioned its proportions and have recommended that, until the situation clarifies, the program be reduced to a size more nearly in keeping with anticipated requirements.

There is general agreement within the industry that existing training facilities be preserved, and that due consideration be given to the contingencies of the future in formulating any program.

Legion M.M. Conference Held In Great Lakes Area

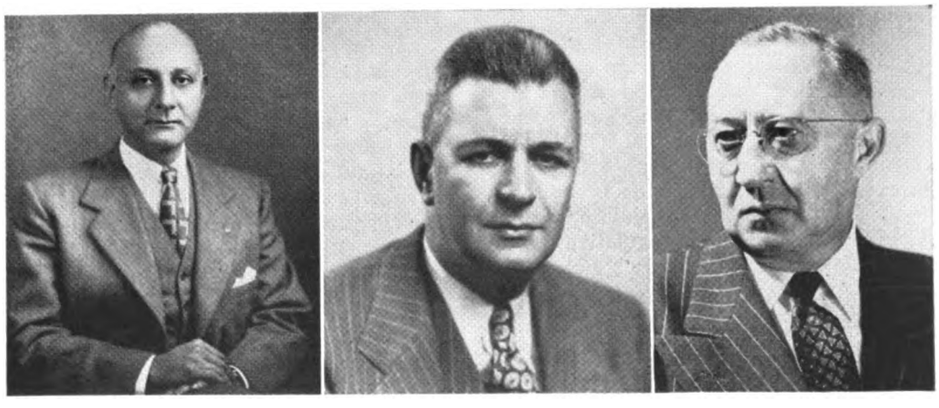
Carrying out its program of direct action for implementation and maintenance of a strong American Merchant Marine, the American Legion held a Merchant Marine Conference for the Great Lakes Area on December 8th at Cleveland, Ohio.

At the Conference, which was attended

(Continued on Page 63)

NOW IN JAPAN to serve as shipping advisers to GENERAL DOUGLAS MacARTHUR and his staff are: COLONEL ARTHUR SYRAN, left, who will head the mission; ELMER E. ANDERSON, center, Traffic Manager, American Mail Line; and WILLIAM E. REAGH, right, Marine Superintendent, American President Lines.

The men will make a survey of Japanese shipping conditions with a view toward partial rehabilitation of that nation's merchant marine.



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NAVAL ARCHITECTS CONFERENCE

The Society of Naval Architects and Marine Engineers, holding its 55th Annual meeting in New York November 12 to 15, brought forth many excellent papers on technical subjects. In addition to the conference sessions, the Society awarded prizes to its members for notable accomplishments in the field of naval architecture and marine engineering during the year.

The ninth award of the "David W. Taylor Medal" was made to David Arnott, retired, until recently Vice President and Chief Surveyor of the American Bureau of Shipping.

"The Captain Joseph H. Linnard Prize" was presented to Robert W. Nolan for his paper "Design of Stacks to Minimize Smoke Nuisance", presented at the annual meeting of the Society in 1946. Mr. Nolan is in the Engineering Technical Division of the Newport News Shipbuilding and Dry Dock Company.

"The President's Award" for 1946 went to Charles H. Johnson, Chief Engineer of the Federal Shipbuilding and Dry Dock Company, for his paper "A Marine Gas Turbine Installation", which was selected as the best paper presented before a meeting of a Local Section of the Society during the year 1945-1946. It was read before the New York Metropolitan Section.

"The President's Award for 1947" was presented jointly to Ralph H. Symonds and Henry O. Trowbridge in recognition of their paper "The Development of Beam Trawling in the North Atlantic", which was selected as the best paper presented before a meeting of a Local Section during the year 1946-1947. This paper was presented at a meeting of the New England Section. Mr. Symonds is President of the New England Trawler Equipment Company, and Mr. Trowbridge was formerly with the Bath Iron Works Corporation and is now with the Bureau Veritas.

"The Junior Paper Award went jointly to Lieutenants Samuel R. Heller, Jr., and Robert H. Slaughter, Jr., for their paper "Launching Large Vessels in Restricted Waters", presented at the March 1947 meeting of the Chesapeake Section of the Society. Both officers were stationed at the Norfolk Naval Shipyard at the time and are now at M.I.T.

A 50-year Membership Certificate was presented to Mr. Spencer Miller of Laguna Beach, California, who joined the Society in 1897.

A large delegation of the Society's members attended the unveiling of a bronze plaque given in memory of the late Vice Admiral Howard L. Vickery, USN. The plaque is mounted on Vickery Gate at the entrance to the United States Merchant Marine Academy at Kings Point. It was presented to the Academy by the Society as a means of honoring Admiral Vickery for his outstanding success in directing the construction of merchant vessels in World War II while a member of the Maritime Commission.

At the annual banquet of the Society, Admiral William H. P. Blandy, USN, Commander-in-Chief of the Atlantic Fleet, addressed the members on "The Future Value of Sea Power". The banquet was presided over by Vice Admiral Edward L. Cochrane, USN (ret), President of the Society.

Following are the authors' extracts from the nine technical papers presented during the annual meeting.

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Various Governing Bodies and Their Effect on Shipping

By WILLIAM P. JUPP, GEORGE I. SULLIVAN *and* WOLCOTT E. SPOFFORD*

The importance of the *subject* of this paper cannot be overstressed to all concerned with merchant marine affairs at this time, because the laws and regulations governing our merchant marine may, in the final analysis, determine whether or not we shall continue to have a merchant marine.

Further, it cannot yet be determined whether or not the 2nd Session of the 80th Congress may decide to change the whole structure of governmental administration over the merchant marine. Such a change may be drastic.

In this paper, the authors have endeavored to give a resume of the functions and functioning of the government in regard to merchant marine affairs, and the effects of such functions and functioning on the shipping industry.

The obvious intent of the laws and regulations of successful foreign maritime powers has been to foster and protect all phases of the industry; but, in recent years, the effect of some of the U. S. laws and regulations has apparently been to protect everything but the economics of the industry. In the philosophy of governing bodies and regulations we have followed almost precisely the historical sequence of events of the British merchant marine from 1066 to 1776, but, in this respect, we have not progressed much past the 1776 stage of the British merchant marine.

The recorded historical experience of the British merchant marine, together with our own experience in two world wars, and the acknowledged necessity of our national security and prestige demands a healthy and adequate merchant marine. It is deemed more imperative that we *now* have a strong, progressively designed and constructed merchant marine than at any other time in our history.

The Owner Pays the Bill

One of the most demoralizing phases of this problem is that the shipbuilders, steamship owners and operators have too many government agencies with which they have to deal and too many laws, rules and regulations with which they have to comply. More are being added each year, while the real need is for integration and simplification.

Because the shipbuilder does not usually build ships for his own account, his concern with the numerous laws, rules and regulations is not primarily with cost. When he puts in his bid, he usually bids on specifications calling for design, material, equipment and workmanship in accordance with the requirements of certain regulatory bodies. He is supposedly familiar with these requirements, includes the cost in his bid and thus passes it on to the owner. It does not follow that therefore the builder welcomes unlimited rules calling for more equipment and finer workmanship in order to make a bigger and more expensive job. After all, there is the possibility that the cost may become excessive so that the owner cannot make a fair return on his investment and he will decide not to build. After all, the owner pays the bill and is therefore the shipbuilder's best customer. Naturally the builder has the owner's interests in mind at all times. Anything which adversely affects owners or operators in the long run affects the builders and the whole shipping industry.

Vessel specifications usually contain a section stating that the ship as delivered shall comply with the requirements of all or most of the following regulations:

1. American Bureau of Shipping.
2. United States Coast Guard.
3. Revised Statutes, Navigation Laws of the United States.
4. International Load Line Convention, London, 1930.
5. International Convention for Safety of Life at Sea, London, 1929.
6. United States Public Health Service.
7. Senate Report No. 184.
8. Federal Communication Commission.

*William P. Jupp, Marine Construction and Repair Division, Socony-Vacuum Oil Company; George I. Sullivan, Superintendent of Drafting, Bethlehem Steel Co., Shipbuilding Division, Quincy, Mass.; Wolcott E. Spofford, Technical Consultant, U.S. Maritime Commission.

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9. United States Customs Regulations on Admeasurement.
10. Panama Canal Regulations.
11. Suez Canal Regulations.
12. American Institute of Electrical Engineers Recommended Practice for Electrical Installations on Shipboard.
13. All other applicable laws as required for procurement of necessary certification.

Ten to Twelve Hundred Plans

The foregoing is a fairly representative list, although there may be additional foreign or local regulations with which United States flag vessels must comply, but unless special reference is made in the specifications, the builder does not actually consider himself responsible.

A special effort is made to keep the builder's drafting rooms supplied with up-to-date rules since most of the requirements are incorporated into the plans as they are developed. The chief complaint of the shipbuilders is having to submit plans for the approval of, and subject workmanship to inspection by so many agencies. An average size combination passenger and freight vessel requires the delineation of ten to twelve hundred plans. All of these must be submitted to the owner for approval, most of them to the Classification Society and to the Coast Guard, and selected plans to various other Government agencies.

It should not be necessary to seek plan approval or to submit to inspection by more than three authorities, namely, the owner, the Classification Society and the government. All United States government requirements should be incorporated into the rules and regulations issued by one governmental agency and such regulations should be administered by that body. There do not appear to be good and sufficient reasons why the single agency cannot administer all government requirements covering construction and operation of United States flag vessels. The desirability of concentrating in a single government agency the responsibility for all matters relating to construction and operation of American ships cannot be overemphasized.

Checks and Balances

The principal difficulty with the present set-up in governing bodies is that our so-called governmental system of "Checks and Balances" has been misconstrued and overdone. This has apparently been one of the causes for placing the cognizance of maritime affairs in the hands of so many committees in the Congress and with so many executive agencies. However this has not been the case with the regulation of other modes of transportation. A comparison also reveals that other industries are not so completely regulated by so many activities of the government.

Striking examples of the multiplicity of government maritime activities is shown by the number of agencies which have to approve plans for ship construction and by the fact that it takes twelve different government certificates for the documentation of a new vessel on delivery. It also takes nine separate papers to clear a vessel from an American port. These nine clearance papers are in addition to the export-import licenses, permits to deliver cargo, dock receipts to shipper, shipper's export declaration and various other incidental papers. The present set-up is lacking in efficiency and economy, and is, to say the least, demoralizing to the industry.

Committees, Bureaus and Agencies

In the making of our maritime laws and regulations, we have done little plan-

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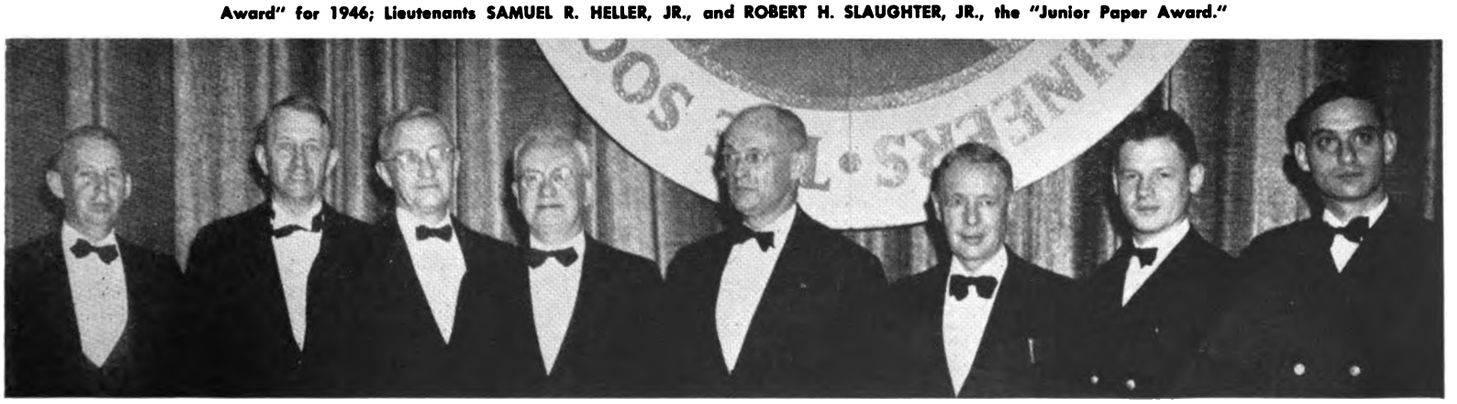

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NAVAL ARCHITECTS

ning and hence have had no continuity of motion. We have 23 standing committees in the Congress making conflicting laws which form the basic maritime policy. We have 67 bureaus and agencies in the Executive Branch which make the regulations and execute the laws as made by the Congress. Many times during the past 25 years, whenever the authority and cognizance of two governmental agencies have conflicted, a third agency has been created which sometimes overlaps the other two agencies. The past and present agencies having to do with housing and labor are good examples of this practice. We have also seen the effects of the multitudinous activities and regulations on the shipbuilding and shipping industry.

The fact is, that our merchant marine regulatory bodies have, during the past 150 years, grown without any unity of action and purpose, while the regulation of other industries has been more carefully observed. We need a strong merchant marine and we will have one if a consistent policy is initiated and regulated by integrated components of the Government which have for their unified purpose the good of the merchant marine.

The governmental agencies making regulations for our merchant marine must be unapproachable from a political point of view. Appointments made in these agencies should be made under the U. S. Civil Service Rules. Persons so appointed should be taken from experienced merchant marine and shipbuilding personnel. These are imperative fundamentals under which the merchant marine regulatory bodies of the Government must operate, if our merchant marine is to survive.

Merchant Marine Advisory Committee

In view of the above, it is recommended that a Merchant Marine Advisory Committee be formed. This committee to be made up of one member from each of the recognized merchant marine industrial associations and societies, including the following:

1. National Federation of American Shipping.
2. Shipbuilder's Council of America.
3. American Merchant Marine Institute.
4. The Maritime Association of the Port of New York.
5. Association of American Ship Owners.
6. Ship Owner's Association of the Pacific Coast.
7. Lake Carrier's Association.
8. Pacific American Steamship Association.
9. Pacific American Tankship Association.
10. American Waterways Operators, Inc.
11. The Mississippi Valley Association.
12. The Society of Naval Architects & Marine Engineers.
13. American Petroleum Institute.
14. Chamber of Commerce of the United States.
15. National Defense Committee of the American Legion.
16. Other associations with common interests might be added to the above list.

This committee could be formed in various ways, one method being by invitation of the commandant of the United States Coast Guard.

It is recommended that this committee act in an advisory capacity to all the governmental regulatory bodies similar to the Tanker Industry Committee which has been successfully acting in this capacity for that industry for over 15 years. The Congress has set its stamp of approval on such a recommendation by Section 212 of the Merchant Marine Act of 1936.

Such a committee can further serve by stabilizing the industry, by keeping the public informed as to the necessity for an American merchant marine, and by preventing American shipping and shipbuilding from again becoming a national and international football and "whipping boy".

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Some Considerations in the Design of Modern Ships

By GEORGE G. SHARP,
Naval Architect and Marine Engineer, New York

There are certain problems of ship design which have heretofore been dealt with in terms of methods which were first developed many years ago, in spite of the fact that subsequent changes in the nature of those problems would appear to require corresponding changes in the methods of dealing with them. A good example is the problem of arranging the accommodation areas of passenger vessels. There was a time when a large part of the area inboard of the rooms at the ship's side was required for machinery casings, public sanitary facilities, etc.; the remaining space was used for inside rooms. Subsequent increases in the relative beam dimension, however, and concurrent reduction in the areas required for machinery casings and public sanitary facilities, have made a great deal more of the inboard areas available for accommodations. The general tendency has been to continue to use these areas for inside rooms, with very limited access to the ship's side or none at all.

But inside rooms do not offer the same attractions in the matter of light, air and vision as do rooms at the ship's side, and for this reason are not considered very attractive. Some means of getting light, air and vision to the inboard areas—some means of bringing the ship's side, in effect, to those areas—would accordingly appear highly desirable. The author has developed two methods of doing this; one, by arranging groups of staterooms about semi-private verandas at the ship's side, and another by grouping staterooms along a wide transverse court, approximately the width of a reasonably-sized promenade deck, running from one side of the ship to the other. All rooms facing the verandas or courts have one or two windows looking directly on to these naturally illuminated and ventilated areas, with a view of the sea through the court or veranda windows

VARIOUS GOVERNING BODIES AND THEIR EFFECT ON SHIPPING . . . Authors GEORGE I. SULLIVAN, Superintendent of Drafting, Bethlehem Steel Company, Shipbuilding Division, Quincy, Mass.; WILLIAM P. JUPP, Marine Construction and Repair Division, Socony-Vacuum Oil Company; WOLCOTT E. SPOFFORD, Technical Consultant, U.S. Maritime Commission.

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at the ship's side. Both the veranda and court arrangements, by providing continuous open space completely across the vessel, provide a degree of cross-circulation which, in combination with an adequate system of mechanical ventilation, would make air-conditioning unnecessary at sea under all but extreme weather conditions. A study of several applications of this type of arrangement to existing vessels indicates that, by this treatment, inside rooms can virtually be eliminated without any loss, and in some cases with a gain, in total passenger capacity.

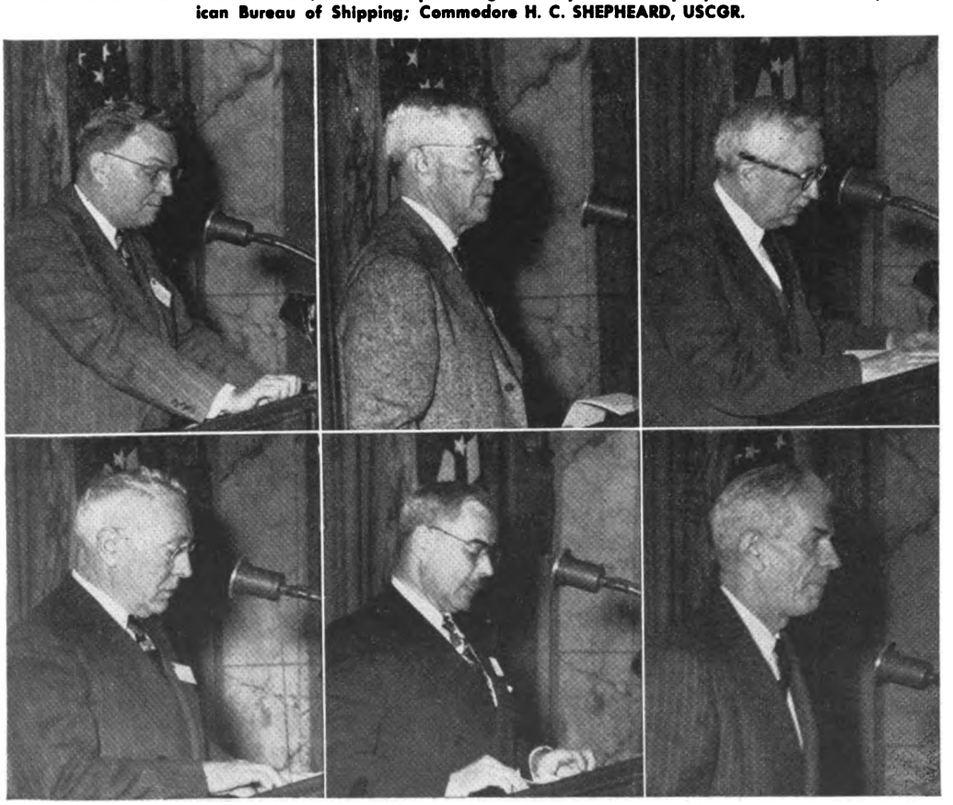
Airline Competition Affects Steamship Accommodations

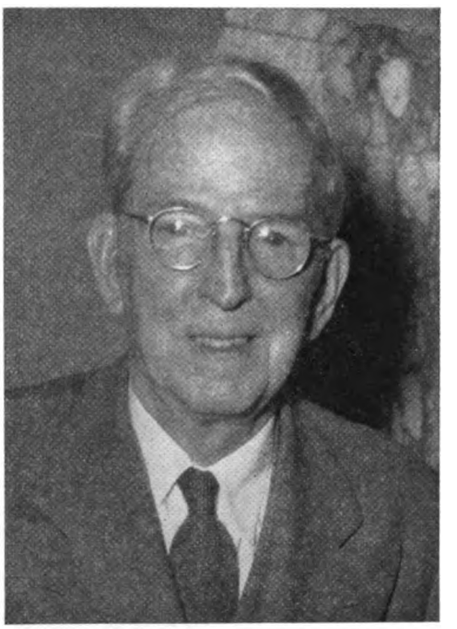
This emphasis on attractive accommodations is all the more important in view of the competition of the airlines for passenger traffic. A passenger ship can only offer superior comfort, and a way of life which is an objective in itself. In some services competitive considerations will also require air conditioning of all or most of the accommodations, so that new methods must be developed to solve the problems which are peculiar to shipboard air conditioning installations. For one thing, almost absolute perfection is required in the installation of duct work and piping, and in the application of insulation, in order to avoid serious difficulties in the matter of condensation and leakage, and it would accordingly appear that chilled air ducts and conduits should be eliminated, wherever possible, by cooling the air at the room instead of centrally. The problems of room temperature and recirculation appear to require local control by the occupant if necessary flexibility is to be achieved. The various systems now in use are discussed and suggestions made as to how a more effective system might be designed.

Another case in which the following of traditional methods no longer serves a useful purpose is the problem of stack design. For some time an effort has been made to compromise good engineering with a modern, artistic effect, and the results to date have not been too successful. The problem has been complicated unnecessarily by the traditional tendency to associate the stack and the uptake as a single unit. If they are separated, and the stack, instead of being made an enclosure for the uptake, is considered as a part of the superstructure, useful for housing whatever facilities or equipment its size permits, the uptakes may be increased in height and reduced in diameter to such an extent that they need be no more conspicuous than a kingpost or a mast. The stack may be given any size, shape or location that might be desired, permitting the development of a profile appearance harmonizing with modern trends of design. Several illustrations are offered of the possibilities inherent in this treatment.

DISCUSSERS . . . each paper presented at the conference sessions elicited considerable discussion, but none more spirited than the paper "Various Governing Bodies and the Effects of Their Regulations on Shipping." Shown here, in various attitudes of intentness, are, top row: HAROLD F. ROBINSON, Bethlehem Steel Company, Shipbuilding Division, Quincy Mass.; H. GERRISH SMITH, President, Shipbuilders Council of America; B. E. MEURK, Manager, Isthmian Steamship Company.

Bottom row: C. A. RASMUSSEN, Federal Shipbuilding and Dry Dock Company; J. LYELL WILSON, American Bureau of Shipping; Commodore H. C. SHEPHEARD, USCGR.





SOME CONSIDERATIONS IN THE DESIGN OF MODERN SHIPS . . . Author GEORGE G. SHARP, Naval Architect, New York.

Modifications of Fire Control Systems

Another subject, in regard to which some modifications might be made in the customary approach, is the matter of fire control, and the regulations presently enforced by the Coast Guard in regard thereto. The author, who has been closely associated with the development of these rules, has recently come to the conclusion that, in one respect at least, they may be unnecessarily restrictive; that is, the requirements for insulating value of various classes of bulkheads and decks, particularly in the accommodations areas, may be excessive. Since these bulkheads and decks must be constructed with incombustible materials, made intact from deck to deck, and so constructed as to maintain their integrity through a severe fire test, the problem of heat transmission is probably not as serious as was thought when the rules were first developed, and it is therefore suggested that consideration be given to relaxation of the heat transmission requirements, with the possible result that considerable economies may be achieved in construction costs.

In conclusion, it is suggested that further thought be given to the external appearance of American vessels, and to the design and styling of the interior spaces. It is possible to go too far in placing the responsibility for these features in the hands of designers who specialize more in the novel and spectacular than in the creative artistry which truly livable and attractive living quarters require. There is a great deal in the more restrained versions of modern design that is highly suitable for our passenger vessels, but its development and selection should be entrusted to those who are properly qualified by background and experience.

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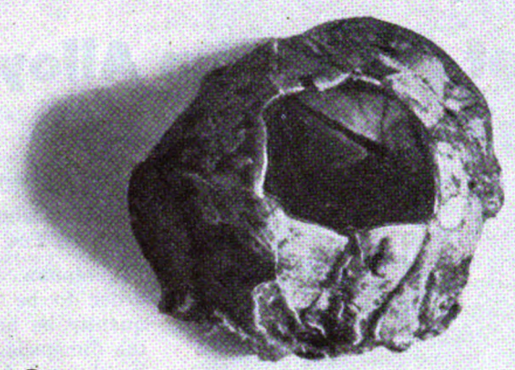

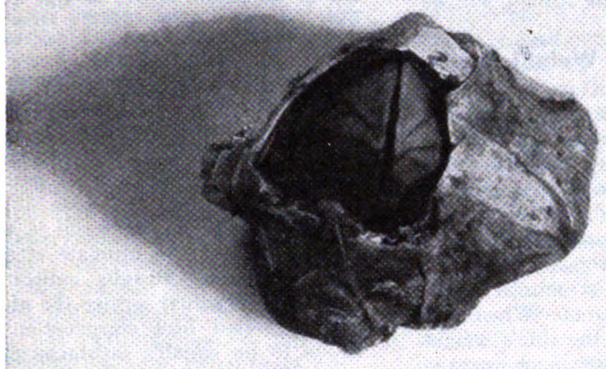

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construction, and housed in a smart-looking, seaworthy structure, offer the public an experience which no other form of travel can duplicate, and if the naval architect gives them adequate attention in the development of his designs, there should always be a place for the passenger vessel in our transportation economy.

USE OF ALUMINUM ALLOYS IN SHIP CONSTRUCTION . . . Author M. G. FORREST, Senior Assistant Naval Architect, Gibbs & Cox, Inc.

Use of Aluminum Alloys in Ship Construction

By M. G. FORREST,
Senior Assistant Naval Architect, Gibbs & Cox, Inc.

Construction of aluminum alloy ocean going vessels up to 450 feet in length is an actual possibility at the present time. Present practical limitations in the size of shapes and plates preclude the possibility of larger vessels.

Examination at various times under service conditions indicates that the new aluminum alloys are fulfilling their design purpose, which is to satisfy the requirements for a lightweight, non-corrosive material for sea-going service. The primary justification at the moment for the use of aluminum in lieu of steel, is the saving in weight that can be obtained. This in turn will usually be reflected in an increased deadweight carrying capacity; an offsetting item to be considered when evaluating the higher initial cost of the material and its fabrication.

Proportions of aluminum vessels will, in general, follow those of steel vessels. However, there are exceptions where an increase in the Depth to Beam ratio and a decrease in the Length to Depth ratio is advisable. More than the usual particular attention must be paid to details, so that extremes are avoided which would require unusual scantlings beyond the rolling and extrusion limits of aluminum.

In the layout of the form, every reasonable attempt must be made to keep the number of furnaced plates and shapes at a minimum. If they require heating in order to be formed, they must subsequently be heat treated. In these cases, the dimensions are important because of limitations of the heat-treating furnaces. Whenever possible the design should be such, that cold forming will be all that is necessary. The vessel today, and probably for some time in the future, will be riveted.

Thirty-eight Per Cent Weight Saving

The procedure used in arriving at the strength of an aluminum ship is, in general, that used for a steel ship, when due consideration is given to the properties of the material. A section of an aluminum vessel will show a weight saving over a similar steel vessel of approximately 44 per cent, taking into consideration the plating, framing, main structural bulkheads and superstructures. When the other items included in the ship's weight are taken into consideration, such as cargo handling and rigging, hull piping, electrical plant, deck machinery, etc., the total saving in weight will be 38 per cent.

Particular attention must be paid to the design of riveted joints in an aluminum ship. Generally, where it has been necessary in steel to use only single strapped butt joints, double strapped joints must be used in aluminum. Also, it will frequently be found necessary to add an additional row of rivets. The shear value of 53S aluminum rivet material is only 57% of the ultimate strength of the 61S-T base metal, whereas the shear value of steel rivet material is approximately 80% of the ultimate strength of the base metal. Results indicate, however, that in actual service the aluminum alloys riveted hull construction should prove to be equally satisfactory from a strength standpoint as the steel rivet construction so successful in the past.

The fact that riveted construction is employed, requires that consideration be given to the deflection of the ship as a whole. Also the effect of this deflection on the ability of the riveted joints to preserve the tightness of the structure. The amount of deflection in an aluminum

THE RESISTANCE OF BARGES AND FLOTILLAS . . . Author L. A. BAIER, Chairman of the Department of Naval Architecture and Marine Engineering, and Director of the Naval Testing Tank, University of Michigan.

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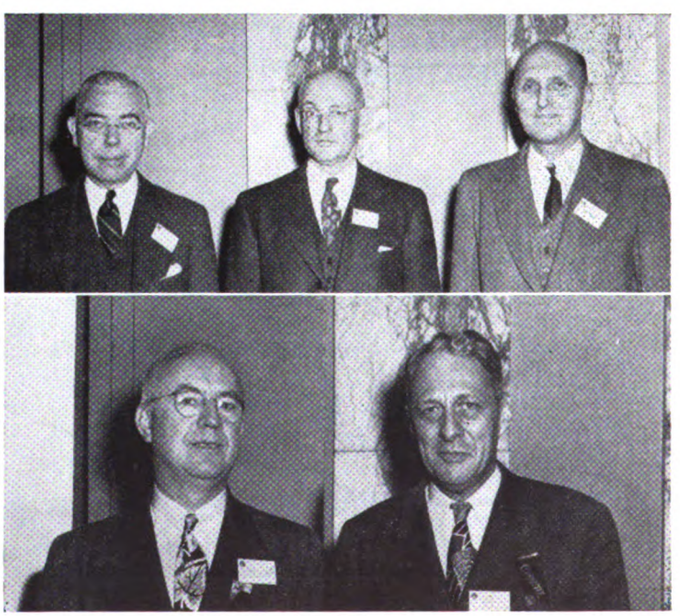

NATIONAL OFFICERS of the Society of Naval Architects and Marine Engineers. Top row: J. H. KING, Treasurer; Vice Admiral EDWARD L. COCHRANE, President; WILBUR N. LANDERS, Secretary. Bottom row: HAROLD M. WICK, Chairman, Publicity Committee; ARLO WILSON, Assistant Secretary.

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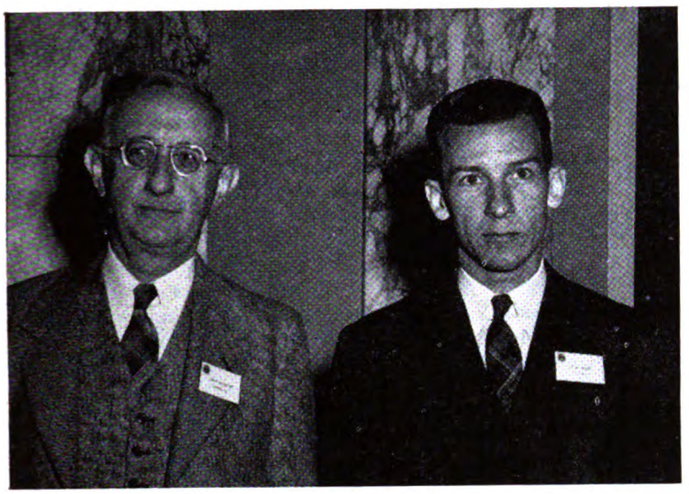

MECHANICAL REDUCTION GEARS . . . Authors J. A. DAVIES, Manager, Marine Turbine Engineering Department; and H. W. SEMAR, Superintendent of Quality Control, Westinghouse Steam Division, Westinghouse Electrical Corporation.

THE MULTIPLE-SKEG STERN . . . Author Captain HAROLD E. SAUNDERS, Special Assistant to the Chief of the Bureau of Ships, Navy Department, Washington, D.C., and former Director of the David W. Taylor Model Basin, Carderock, Maryland.

ship as compared with a steel ship is in inverse proportion to their respective Moments of Inertia times the Modulus of Elasticity. The result of this will generally show the deflection of an aluminum ship to be twice that of a comparable steel ship.

Corrosion Reduced Through Use Of Aluminum

Restoration of the balance between the weight and vertical center of gravity of the machinery plant in relation to that of the hull, is becoming apparent in the use of aluminum for hull construction. Heretofore, the weight of the machinery plant has been getting smaller, and this in conjunction with the usual steel hull weight has had the effect of raising the overall center of gravity. Many approximations used in basis design in years past had to be adjusted because of this condition. The use of aluminum for hull and those parts for which it is suited, will permit the return to design values used earlier. In a normal cargo vessel of medium size, the vertical center of gravity of the aluminum ship will be at least 6″ lower than in a similar steel ship.

Corrosion which may take place in aluminum alloys is in the form of pitting rather than scaling as in mild steel. Such a loss, which is very small, occurs very promptly and does not increase to any material extent during the life of the metal. To prevent this occurring, the metal when received in the stockyard should be given a coat of zinc chromate primer after being first cleaned and treated with a water solution of phosphoric acid and grease solvents. There are a number of commercial anti-fouling paints which have been found to give satisfactory service on aluminum. When applied over one or two coats of the zinc chromate primer, no corrosion of the aluminum occurred despite the fact that the toxic ingredients in these paints are corrosive to aluminum. Topsides, the same primer followed by finish paint of the desired color will be found satisfactory.

The combination of nickel alloys with aluminum alloys should be avoided. The resulting corrosion of the aluminum is bad with all nickel alloys and is worst with copper base alloys. At the present time, welding of aluminum alloys by the usual means is not recommended for marine work where strength is involved. Aluminum is suitable for many marine electrical applications where steel or copper is normally used. The primary application is for electric cables, not only for the outer braid, but for the conductor as well. However, more weight of insulation is required for the aluminum conductor than for the copper one, since the diameter of the aluminum conductor is about 25% larger than that of the equivalent copper conductor.

A good future for the aluminum ship is indicated and the construction of a relatively large vessel will be the basis for further claims as to the usefulness of this new shipbuilding material.

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ELECTRONICS ON SHIPBOARD

By* H. FRANKLIN HARVEY, JR. *and* FREDERICK P. COLEMAN

In industry, "electronics" has become a magic word. Many processes and techniques, undreamed of before Lee DeForest's development of the vacuum tube, are now accepted by engineers with much the same attitude as that with which the public accepts the miracles of radio broadcasting and television which are the best known products of that branch of science dealing with electronics.

Everyone has known of the radio telegraph since Jack Binn's dramatic call of help for the REPUBLIC and FLORIDA in 1909 and the summons from the ill fated TITANIC in 1912. It may not be generally known, however, that the radio telegraph was the earliest commercial use of electronics, and that the first call from a vessel in distress was in 1899, only three years after the issue of the first Marconi patent.

The radio telegraph is still considered the mainstay for safety of life at sea. It is required by treaty agreement for vessels making international voyages, and by federal law for practically all ships of American registry operating at any considerable distance off shore. The radio telegraph, however, is only one of many electronic systems provided for the safety, convenience or entertainment of crew and

*H. Franklin Harvey, Jr., Electrical Engineer, and Frederick P. Coleman, Assistant Electrical Engineer, Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

ELECTRONICS ON SHIPBOARD . . . Authors H. FRANKLIN HARVEY, Electrical Engineer; and FREDERICK P. COLEMAN, Assistant Electrical Engineer, Newport News Shipbuilding and Dry Dock Company.

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NAVAL ARCHITECTS

passengers.

On passenger ships there will be a "high seas" radio telephone so that an executive, going, say from New York to London, can keep in continuous communication with his office at home and his representatives at the destination. To assure privacy, the signals are "scrambled" in the transmitter in such a way that they are unintelligible to any except the intended receiver equipped with a matching "descrambler."

Up-to-date cargo vessels will be equipped with a "coastal-harbor" radio telephone permitting the captain, 24 hours before arrival in port, to call the ship's agent ashore and arrange for berthing, for discharge and loading of cargo and for any needed repairs or supplies.

Columbus, on his voyage of discovery, used an hour-glass for time and the crude instruments of his day for celestial observations, and at no time did he have more than a vague idea of his precise position. The twentieth century ship, up to the last few years, was equipped with precision chronometers and the most modern instruments of greatly improved accuracy, but the basic method of navigation was the same as used by Columbus. The navigator was equally dependent on visibility of the proper celestial bodies and the observations and subsequent computations required 20 to 30 minutes.

The navigator of a truly modern vessel on the high seas tunes in his loran (LOng RAnge Navigation) receiver on any transmitting stations within about 1400 miles, and in two to three minutes, independent of weather conditions, he has his precise position spotted on the chart.

Navigational radar is an adaptation to peacetime needs of the celebrated surface search radar, developed and used to such good effect during the late war, for location of hostile vessels.

On the high seas in darkness, fog or other periods of low visibility the radar will be used to detect nearby vessels, derelicts, icebergs or other obstructions, and thus avoid collision. The probability of such a catastrophe as that of the TITANIC should be negligible for a radar-equipped vessel.

When the hypothetical vessel discussed in preceding paragraphs approaches port, navigation is restricted to narrow dredged channels and traffic will be relatively heavy. With poor visibility, in the pre-radar era, the captain would drop anchor, start the fog signal and wait for clear weather. With an effective radar such delay is unnecessary, since every buoy, beacon and other marker is shown in true position on the radar scope, permitting accurate navigation. Also, collision with moving or anchored vessels or other obstructions may be avoided, since these too are shown. Thus radar not only greatly promotes safety but should, in a short time, save its cost by avoidance of delay.

From the foregoing discussion, it will be noted that the three radio aids to navigation, radar, the direction finder and loran are complementary and not competitive. On a well appointed ship, all three will be provided.

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FACTORS IN THE USE OF PLASTIC SHIP-BOTTOM PAINTS

By DANIEL P. GRAHAM*

During World War II the Navy was able to operate its vessels with a minimum of interference from barnacle attachment on the underwater surfaces which has a bad effect on speed and fuel consumption. The author traces the many years' efforts to perfect a paint system for ships' bottoms that would rid the Navy from this trouble. This goal was reached by the development and use of the type of paint alluded to in the press as "Plastic Paints". Formulas for these paints which have remained in a confidential status until now are given publicity for the first time in the paper. The author describes the methods for preparation of the underwater hull, to receive application of the plastic paint system and the somewhat involved procedure to handle the paints themselves. The author was able to demonstrate the benefits from and the factors which influence the use and performance of the plastic paints by an analysis of conditions as reported at the subsequent drydockings of Naval vessels after varying operating periods. Some vessels were in operation over 300 days without docking.

The problem of determining which anti-fouling ship-bottom paint is giving the most effective performance in service has been approached from many angles. Since service performance of the paint is influenced by many uncontrolled variables, it was necessary to consider the following factors in paint comparisons:

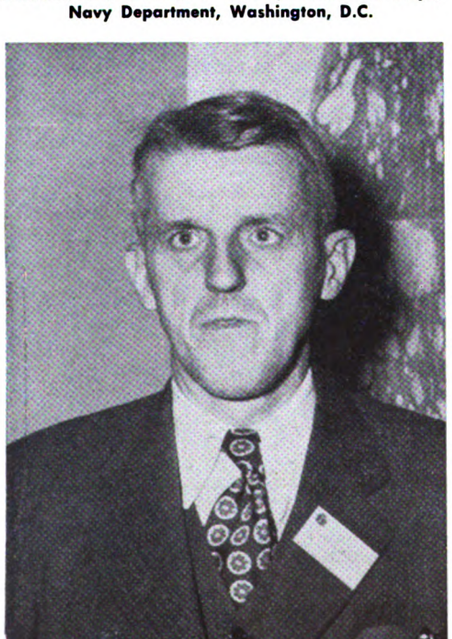
1. Temperature in dry dock during paint application.
2. Change in temperature during application.
3. Hull preparation prior to paint application.
4. Film thickness of the coating system.
5. Days waterborne.
6. Activity of ship during waterborne period.

It is recognized that paint performance

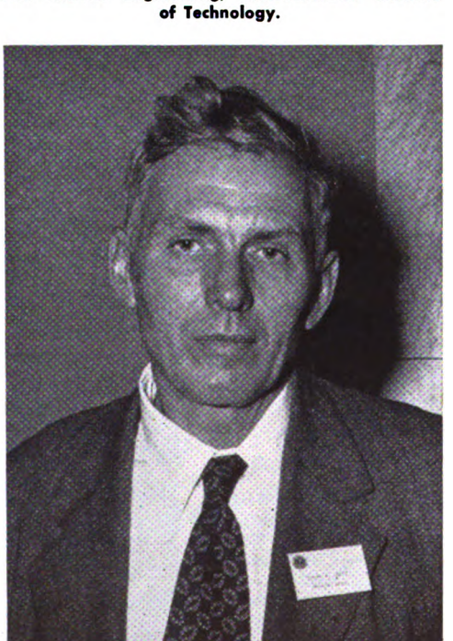
(Continued on Page 52)

Chemist, Research and Standards Branch, Bureau of Ships, Navy Department, Washington, D.C.

FACTORS IN THE USE OF PLASTIC SHIP-BOTTOM PAINTS . . . Author DANIEL P. GRAHAM, Chemist, Research and Standards Branch, Bureau of Ships, Navy Department, Washington, D.C.



PROPELLER TUNNEL NOTES . . . Author FRANK M. LEWIS, Professor, Department of Naval Architecture and Marine Engineering, Massachusetts Institute of Technology.



KEEP AMERICA STRONG ON THE SEAS . . . was the subject of an address to the members of the Society by Representative HENRY J. LATHAM, member of the House Merchant Marine and Fisheries Committee.

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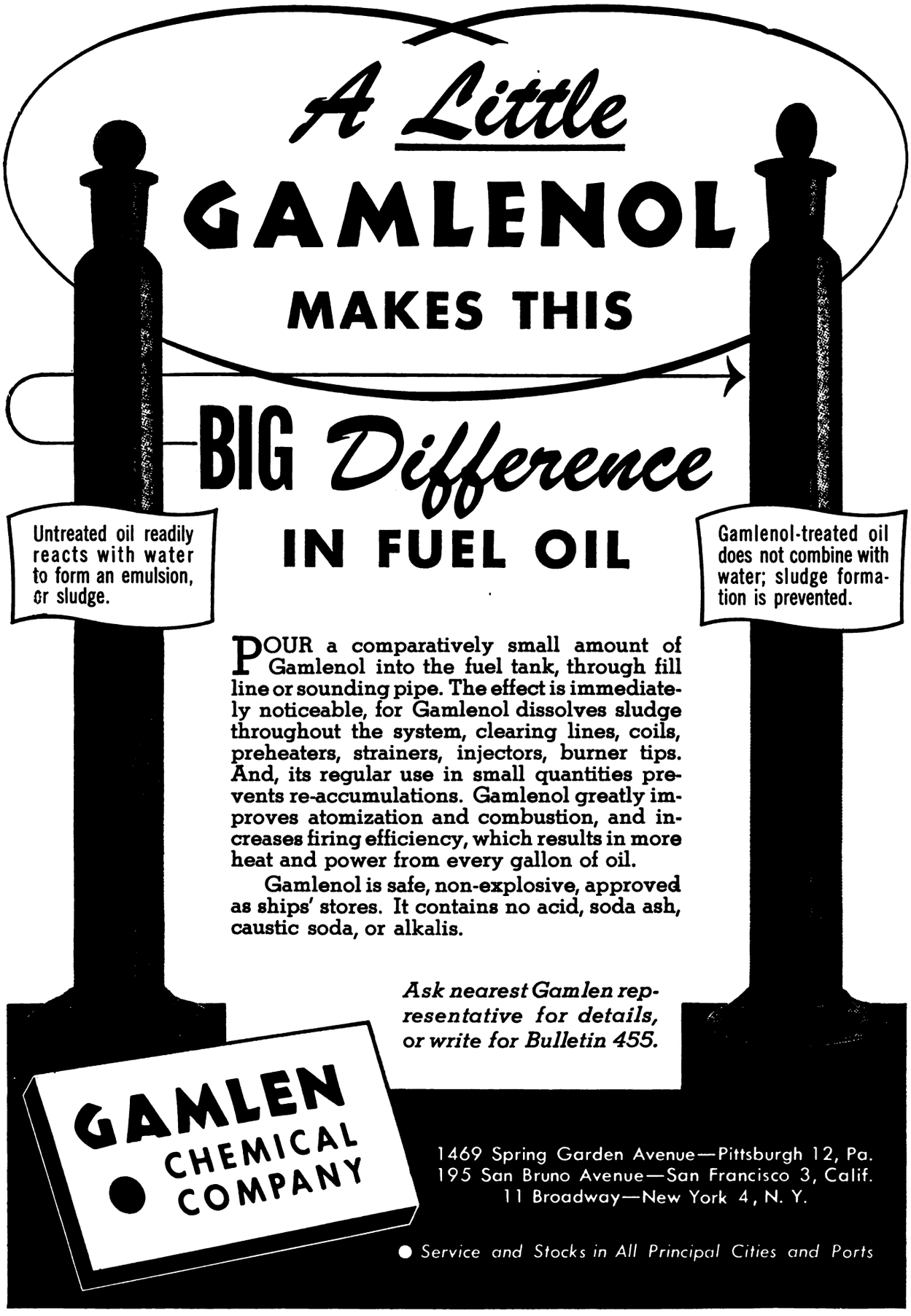

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STEWARD'S FORMULA FOR

A "HAPPY SHIP"

A Chief Steward sounds off about his position aboard ship. And, incidentally, you'll recognize the situations.

Editor's Note: This article is reprinted from the August 8, 1947 issue of the "Pilot", newspaper of the National Maritime Union. It was written by Reynold Robinson, chief steward and former official of the NMU, and appeared in Ferdinand Smith's column "On the Beam." We think some of Mr. Robinson's beefs have considerable merit and are passing them on to you, our readers, in his own language.

While some of the Union officials are going at each other with hammer and tongs, they are not in contact with the small things aboard ship. I am speaking strictly of the freighters that carry the bulk of cargo and the bulk of seamen, because they comprise the transportation arteries of the world, and of course, the bulk of employment of seamen.

It has been the practice, condoned by many of our officials, that the chief steward is practically a nonentity on board ship. Usually when a member of the engine or deck department is elected, it is mostly a wiper or an ordinary seaman. They of all people know, or claim to know, the duties of the chief steward. Somewhere along the voyage it generally turns out that they can cook or are in possession of all the knowledge necessary of the chief steward. They have their own pet conceptions of what a chief steward's job should be and do not hesitate in many instances to vociferously lay down the law as to what they expect from said chief steward. Among these is the fallacy connected with the so-called food committee, which to my mind is the most incompetent resolution which can be passed in any meeting on board ship.

Perhaps I would better stress the point that on freighters, especially on Liberties, which go on long voyages, the fresh provisions, such as vegetables, fruits, will only last for a certain period before they begin to deteriorate. And procuring same in foreign ports is often a problem. Most of these countries where the ship puts into port have very little for themselves in the line of any kind of food, and as far as ships go, can only let you have what they think they can spare, none of which are any good. It is therefore left up to the steward to stretch his items as far as possible, without running out of food altogether. They are firm in their belief that all the ship has to do is put into port and it will be provided with everything possible. All we have to do is ask for it.

Not only that, they are also firm in their belief that when the ship arrives in these foreign ports, that the chief steward is interested in but one thing, and that is selling the ship out. When he cannot procure these provisions, they believe that he is in cahoots with the captain or somebody, to keep them from getting their just demands.

Bread for Longshoremen —The Milk is Getting Hot

Now I would like to point out the true shortcomings of the deck department when it comes to cooperating with the steward in domestic ports. We will take for instance, when the ship is at the dock for her period of waiting for cargo or some other thing. When the ordinary port stores come on board such as bread, milk and salad vegetables, the steward has one hell of a time getting these things on board. The procedure he generally has to take is as follows: He generally has to see the mate, who in turn wants an OK from the skipper (who most of the time is not on board), then, when you get through all of that, you have to run down and contact the bosun, who may be backaft mixing paint, or something. He, in turn will tell you that he will have to wait until he gets through what he is doing before he can bring stores aboard. In the meantime, the milk is getting hot on the dock, the longshoremen are using the bread for their lunch, and also rifling the rest of the stuff.

It is my firm belief that these stores belong to the crew, and when they are on the dock, that they should be the prime consideration of the deck department who is supposed to bring them aboard and placed in the storerooms and iceboxes, so they can have them for the subsequent meal. But instead of that, they will have the temerity to ask you for these same stores at meal time while they are still laying on the dock. The conception also, of a lot of these so-called planners outside the steward's department is that they do not need any cooks or messmen, as long as they have a good steward. They believe if the cook is mediocre, and the baker is no good, that the chief steward should cover all these jobs at once. They are not in sympathy with the steward if the messman happens to be incompetent, and in these ports most of the time doesn't show up. All they are interested in is that they get their meals and their food brought to them on time and they don't care who does it. If such a situation ever arises, they will quickly hunt up the steward to find out why.

Butcher, Baker and Cook

At most of the meetings on board the ship, both going and coming, the steward is generally the first to be harassed at the beginning, during the voyage, and at the end of the voyage, because he hasn't put out the proper meals, etc.

Now I would like to point out what they expect of a steward in detail. They expect:

1. That he should be a good steward. This, they demand.
2. That he should be a first-class cook.
3. That he should be a better than average baker.
4. That he should be a better than average butcher.

All these three ratings are a trade in themselves for which a fair amount of wages are paid for. This is what they believe he has to do. That when he has no cook, no baker, he has to do these things himself. They don't make it possible to see that if the cook is not putting out the meals, to call him on the carpet, or if the baker is not baking right, to call him on the carpet. Their only interest is to see meals given out, no matter who does it. This is their conception of how the stewards' department should be run. And everyone of them knows, or thinks he knows how the stewards' department should be run.

No Union Hall at Sea

Now I would like to point out the real duties of the steward. It is like any other department. He has to depend on the men around him or who are allotted to him, before he can make any headway whatsoever in running that department. When these men are incompetent, or bogged down, or lax in their work, there is nothing that can be done about it at sea, because we have no union hall to replace these men out there. They do not realize that when any or all of these men cannot do their work that the steward has to do as they demand, for which, technically, he will not be paid. The only way that he will be paid is if these men are broken during the voyage and the monies turned over to him. Sometimes he can't do this because he is simply not up to it. It is too big a job and too big a responsibility.

It is their failure to realize this situation that often makes the steward bitter, antagonistic, and the object of charges when the ship arrives in port. Coupled with that, he also has the company's so-called "average" to contend with. He also has to keep the skipper off his neck in regard to his officers, who have no one to represent them in blasting the steward, except the skipper.

Now their pet conception of what the steward is supposed to do is as follows: Besides being able to cook, bake, butcher, the officers also maintain that he should be able to make a bed, theirs. So that in port when the BR doesn't show up, this falls on him also.

That 5 A.M. Messroom

Many voyages, especially lengthy ones, are rife with bitterness, animosity, name calling, which wind up with charges and

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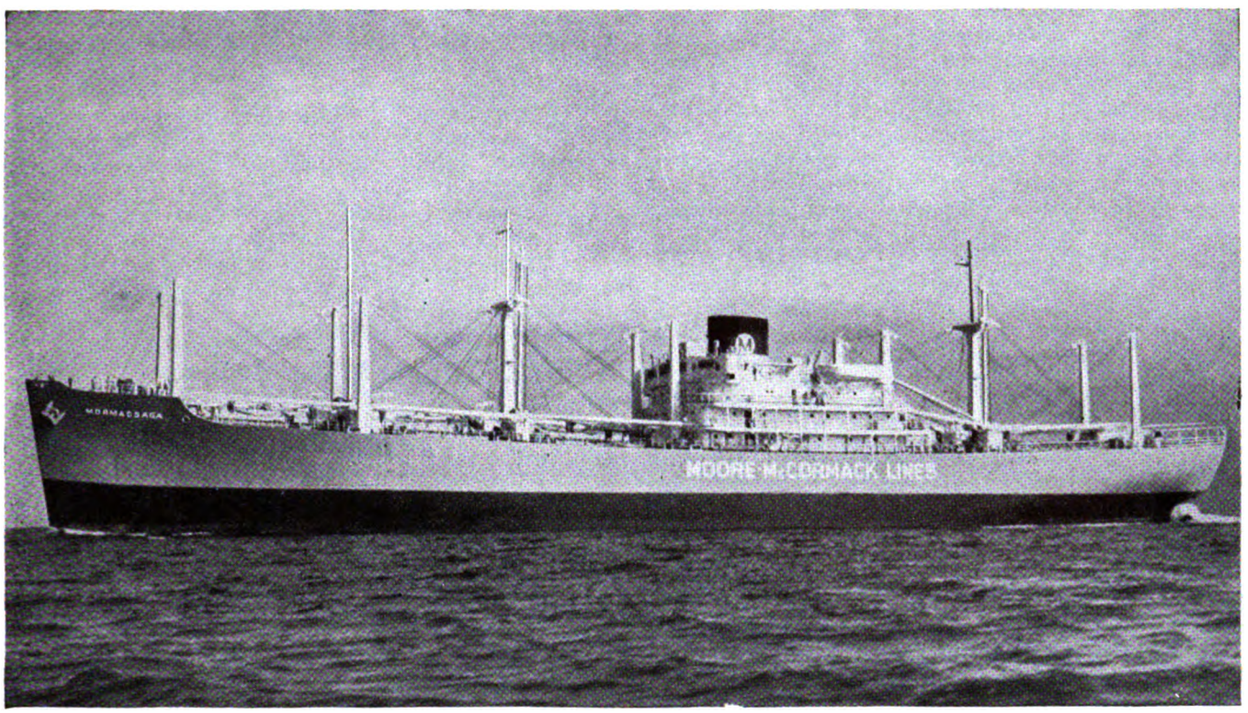

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counter-charges against this and that fellow upon arrival in port. This can be eliminated if the various departments make it their prime purpose to cooperate with the stewards' department in every respect, such as keeping messrooms, pantries, etc., clean during the night. There is nothing more disgusting for a messman, than to get up early in the morning and have to clean up the night's filth from the watchers, who should have done it, and left the messroom in the condition which they found it the night before.

My idea of how to make these voyages more pleasant would be to eliminate the so-called food committee and have the Union appoint competent men to supervise the provisioning of these ships by the various companies, and to check on their so-called allowances and averages.

Also, the skipper of this ship in foreign ports, or any port for that matter, is a direct representative of his company, and as such it is his job to save as much for the company as possible, and he will try not to buy as much as possible, always of course, being guided by the steward's list put out to him by the company who maintained that the ship is stored for such and such a time and there are adequate provisions on board. He is also hamstrung by the previously mentioned facts and prices in that port. He is hamstrung many times by the prices in domestic ports.

After 18 Months a Union Brother

A port steward once told me that I couldn't have any cucumbers because they were 90c a pound on the market, and that this four million dollar concern could not afford it. Naturally the crew would have to do without them. I promptly brought this to the attention of the crew, who told me to produce them, or else.

It also should be realized that the chief steward is the head of the department and as such should command the respect of the lesser ratings, and when being confronted by a particular problem, should be approached in a manner that would not incur the belligerency of that department.

Too many delegates approach the steward in a commanding and disrespectful manner in presenting their beefs. Thus, the first three or four words he says will breed animosity which will probably last for the remainder of the voyage. Any steward will sit down with any delegate at any time and intelligently discuss the problem that they have and try to produce a solution to the problem. Most of the time it is someone who has been going to sea maybe about 18 months, indoctrinated with the belief that he is a union brother and has the right to bawl out the steward, just because he is a delegate.

Overtime Hungry and Department Characters

I, personally, have not come up with any of these situations that I point out, because I make it my business to tell the membership at the beginning of the voyage just what we are in for, and what we might be up against, and then ask for and demand their cooperation. When this does not come, or is not forthcoming, I make it a union issue, and generally these guys come around. Every department has its characters, and the steward is no different.

We shouldn't make any mistake about it. This Union has a certain amount of fakers who are lazy, incompetent, overtime hungry, and are general nuisances aboard any ship. We, as members, should take immediate steps to weed out, with special emphasis on the OUT, these characters, before they put this Union into serious trouble.

All This For $233

All that I have pointed out here, as far as the chief steward is concerned, are his duties, etc. For this he gets the magnificent sum with the last raise of $233 per month, and he the head of the department. Now we will compare this with the electrician who gets darn near as much as the first assistant engineer, and he is only one individual, sometimes two on freighters. My point here is to point out that when these characters go on a ship, they should treat a problem such as this with intelligence and with the interest that they would put in their own family, because that is what the ship is for that voyage, and should make it their business to see that it is a harmonious one.

On ships where the voyage is long and tedious, and where the majority of the men get sick of looking at one another, nerves get frayed, and the least word is liable to start an explosion. All of this stuff generally bounces back on the grade of grub they have been getting and the chief steward.

The Butt of Corny Jokes

Perhaps it would be a good idea to include in our educational program, or included in the curriculum of the Leadership School, that the steward is a human being and should be treated as such. Stewards are getting fed up with this problem being referred to as a laughing matter and the butt of corny jokes from a lot of our officials.

When I am in contact with a lot of stewards in the shipping halls, who disdainfully turn down stewards jobs because of the aforementioned reasons, most of the old-timers are going chief cook and second cook, and many of the messmen are also fed up with this abuse. It means only one thing, that the Union is confronted with the problem of manning the ships with these younger and inexperienced men, who are perpetually a problem and who keep the trial committees busy in most of the ports. Most of the oldtimers are passing the stewards jobs up. I can speak on this problem, because I am fairly, or rather I should be fairly familiar with it, having been a stewards' dispatcher for almost two years. And I know most of these men; have sailed with most of them and I know they are competent men. You bring this problem to the Hall, but have never been able to get very far with it. It is my and their opinion that this should be brought to the membership and to our national officers in some form, and have them look into it, and recommend corrective measures.

‡ ‡ ‡

Sacramento to Become Inland Seaport

The Sacramento-Yolo Port District bond issue of $3,750,000 has been endorsed by the voters to finance the local government's share in a deep water channel and inland seaport at Sacramento, California. The Federal government already had approved the building of the channel as an $11,000,000 federal undertaking, while the State legislature has appropriated $750,000 for the purchase of rights-of-way for the project.

The $3,750,000 bond issue is to provide funds for the building and the actual port facilities—docks, warehouses, connecting rail and highway and other facilities. The sum also includes a 500,000 bushel-capacity grain elevator to serve the large grain growing and processing business in the valley.

‡ ‡ ‡

John J. Hoey Named Oxi Atlantic District Manager

John J. Hoey of New York City has been appointed district sales manager for the Atlantic Coast, according to an announcement by George F. Walters, president of the Oxi Corporation of Gary, Indiana.

Returning to the marine field after association with the Westinghouse Electric Corporation, Mr. Hoey will have charge of the entire Oxi sales and service organization from Maine to Florida. His headquarters will be at 300 West 23rd St., New York 11. Telephone is Watkins 9-7219.

Mr. Walters also announced that stocks of Oxi crystals for chemically cleaning the fire side of boilers and 24-hour delivery service are now available at Portland, Maine; Boston; New Haven; New York; Philadelphia; Baltimore; Norfolk and Newport News.

‡ ‡ ‡

JOHN J. HOEY, recently appointed District Sales Manager for the Atlantic Coast for the Oxi Corporation of Gary, Indiana (left) and GEORGE F. WALTERS, President of Oxi. Mr. Hoey will make his headquarters in New York City.

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Anything a vessel needs, from routine overhaul to major repairs, can be obtained, quickly and expertly, at Todd's Los Angeles yard, with its 5 wharves—2 dry docks (of 10,000 and 18,000 ton capacities)—2¾ miles of industrial track—52 buildings housing up-to-date shops, utilities and offices.

• View of Todd's Los Angeles Division, conveniently located at the head of the main San Pedro Channel of Los Angeles Harbor.

•Weld inspection by Gamma-Ray Radiography—modern technique in use at Todd yards—records internal cracks or cavities on film.

OVER whatever sea route a vessel approaches the coasts of the United States, she will find a modernly equipped Todd Shipyard at a nearby port. Wharves, dry docks, shops, materials—all are ready for quick, efficient action. In addition, staffs of marine architects, engineers and other specialists are on hand, prepared to work alone or with an operator's consultants. Whether *your* vessel needs minor repairs or thorough-going "modernization," call on Todd.... *Mobile service is also available at anchor or at dockside.*

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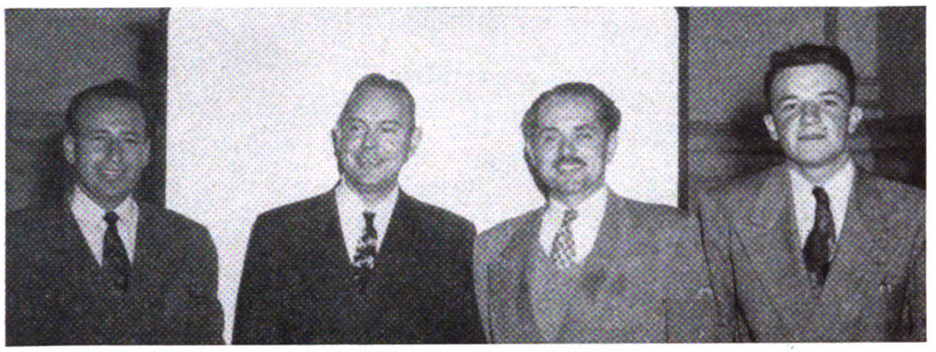
THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG



E. F. DREW & COMPANY presents the program at the December meeting of The Society of Port Engineers, San Francisco. Left to right: JOS. LEWIS, marine service manager, San Francisco; DR. R. C. ULMER, New York, technical director of the company's power chemicals division; J. F. CHURCHILL, Pacific Coast Manager, and NORMAN McLEOD, San Francisco, industrial division.

San Francisco Engineers Nominate 1948 Officers

Sole nominee for the office of president for 1948 of The Society of Port Engineers, San Francisco, is Phillip H. Thearle, superintending marine engineer of the water division of the transportation corps of the United States Army, located at Fort Mason, San Francisco.

Mr. Thearle was nominated by a committee named by President Frank W. Smith, consisting of John Clerico, Pope & Talbot; Harry Martin, Moore-McCormack Lines; Ray Sample, Matson Navigation Company; Al Kyle, American President Lines; Harry Thompson, Shepard Steamship Company and T. J. Garlinger of the Army transportation corps.

Louis Deppman, Sudden & Christenson, vice president for 1947, who was in line for the presidency, declined to be a candidate because of pressure of business.

The election will be held at the January meeting on the seventh of this month. For the office of vice president there were two nominations: M. C. Wright, Deconhil Shipping Company, and John Laine, American-Hawaiian Steamship Company. James A. Riemers was nominated to succeed himself as secretary-treasurer.

Two are to be chosen to the board of governors from these candidates: William Billings, Pope & Talbot; Frank Smith, American Mail Line; V. E. Foell, United States Lines and Herb Steiner, Pacific Far East Line.

New members elected to the society by the board of governors are Frank Fox, General Engineering Company; W. H. Kirkland, James Griffiths & Sons; R. N. Parkin, Westinghouse Electric Corporation; James Payne, American President Lines and James A. Stasek, Pacific Far East Line.

GUESTS at the November dinner meeting of The Society of Marine Port Engineers, New York, N.Y., Inc., were ARTHUR R. GATEWOOD (left), Chief Engineering Surveyor, and WALTER L. GREEN (right), Vice President of the American Bureau of Shipping, New York; B. C. EDWARDS (center), is President of the Society and General Superintendent of Agwilines, Inc.

Mr. Green and Mr. Gatewood led discussions of problems involving surveying by the American Bureau of Shipping.

There will be no speaker at the January meeting, but for February the program will be put on by Gladding-McBean & Company and for March by Gamlen Chemical Company.

William Blake, formerly assistant marine superintendent at the Army Transportation corps, long a member of the San Francisco society, is now a partner with Al Engle in the Triple A Machine Shop, Pier 62, San Francisco.

With slides and motion pictures, Dr. R. C. Ulmer, New York, technical director of the power chemicals division of E. F. Drew & Company, discussed boiler water treatment at the December meeting of the San Francisco port engineers. A question-and-answer period followed, led by Mr. Thearle. Dr. Ulmer, in his talk, condensed the material published in the last two issues of The LOG.

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Insignia Adopted by Columbia River Port Engineers

An insignia design, originated and completed by member Peter C. Muntz, marine surveyor, maintenance and repair division, U. S. Maritime Commission, has been adopted by the Society of Port Engineers, Columbia River area. The complete drawing is arranged with the idea that reproductions will appear in two colors on membership cards.

E. Strandholm, of Campbell Norquist Company, agents for Ray oil burners, was the speaker at the November meeting, on the subject of atomic energy. A motion picture depicting the effects of the atom bomb test at Bikini was shown. Adoption of by-laws was put over for another meeting for further study of annual election date and membership qualifications.

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Seattle Port Engineers Sponsor Poster Contest

In a session docketed for discussion of marine insurance, the Society of Port Engineers of Puget Sound deliberated for three hours on what port engineers should know and do to capably act for owners in event of accident. Prior to the discussion motion pictures showing salvage operations of the ms FELTRE were displayed by James C. Gow, of Alexander Gow, Inc., marine surveyors.

J. D. Gilmour, of the same company,

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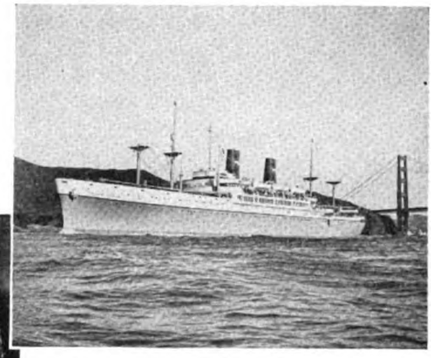

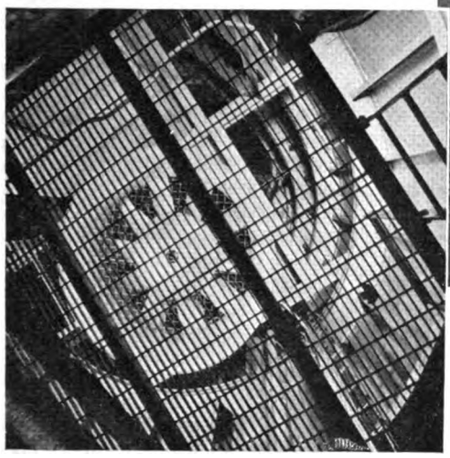

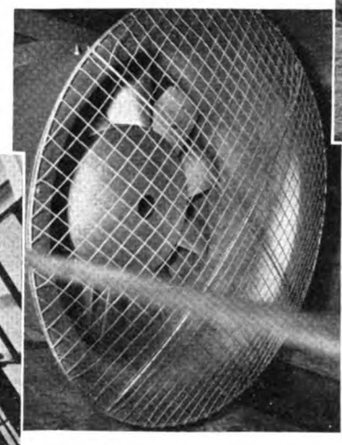

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NEW MEMBERS of the Society of Port Engineers of Puget Sound stand before some of the posters displayed in the contest. From left to right: CAPTAIN L. C. PERRY, Marine Surveyor; FENTON K. YOUNG, Marine Surveyor; LEWIS M. DIAL, M. & R. Division, ATC; JACK P. ROBB, M. & R. Division, ATC; DONALD BANNERMAN, American Bureau of Shipping, a visitor from New York.

described the necessity for detail specifications and the value of definite preamble in any contract between contractor and port engineer. He indicated the importance of visualizing costs involved as between particular average and general average.

The discussion was led by John W. Elkins, principal surveyor at Seattle, Board of Marine Underwriters of San Francisco. Alfred Solibakke, marine superintendent, Puget Sound Freight Lines, counseled on the wisdom of increasing premiums by practice of constantly putting in claims.

A feature of the meeting was announcement of winners in the first annual poster contest of the Society. Premised on an objective of the Society to increase interest in the merchant marine in schools the contest was made a project in the Edison Technical School, a division of the Seattle public schools. Cash prizes of $10 and $5 were offered for the poster judged best for advertising the Society's annual banquet. The posters are being displayed in offices of members, and will be gathered together again prior to the annual banquet on January 16 for use in decorating the banquet hall.

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Dry cargo tonnage loaded and discharged in the San Francisco district in the first eight months of this year gained almost 26 per cent over the same period of 1946.

Plastic Ship Bottom Paints

(Continued from Page 44)

is influenced by other factors (such as humidity conditions in dry dock, the area of the ship operation, speed of the ship, skill of the individual operators applying the paint, etc.) that could not be taken into consideration due to insufficient information. By discounting any *significant* effects of factors on which there were sufficient data, the anti-fouling paints were compared on the anti-fouling, anti-corrosive and adhesive properties. The *anti-fouling* property of each paint was studied by comparing the percentage of fouling reported on intact AF film with that reported on undercoats or metal. On the ability of the paint system to resist *corrosion* the over-all "corrosion rating" was used. To compare the *adhesive* quality of the paint system, studies were made on (1) the percentage of undercoat and metal exposed after the ship had been waterborne and (2) the percentage of touch-up required at the first dry docking after a complete paint job.

These studies warranted the following conclusions concerning performance of standard ship-bottom paints:

1. Fouling on ship bottoms was negligible—only 10 per cent of the vessels were fouled more than 5 per cent. The low percentages of fouling reported on the hull were due probably to activity of the ships rather than to the effectiveness of the paints, since fouling was reported on intact AF film as often as on undercoats or metal.

2. There was no difference in the three anti-fouling paints for surface vessels in average per cent of fouling reported on the entire hull or in the general fouling rating of excellent, good, fair or poor.

3. The average percentage of fouling reported on the entire hull was greater for vessels handbrushed than for vessels sandblasted.

4. Vessels which were sandblasted gave better adhesive and anti-fouling performances than vessels which were handbrushed.

A number of factors must be weighed in any adoption of the hot plastic anti-fouling paint system. These factors involve the itinerary and activity of the vessels for which it is being considered; availability of facilities for application of the paint system, including the electrically heated spray-type equipment. Included also are facilities for preparation of the surface prior to painting by wet sandblasting or equivalent procedures, and a careful control on the manufacture of the paint.

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Harriman Report

(Continued from Page 33)

deadweight tons. The existing tanker construction program is about 4.2 million deadweight tons out of the overall program of 15.5 million tons. Since it would be difficult if not impossible for the Sixteen Nations to expand their overall program even with sufficient steel availabilities, it might be wise to substitute tanker construction for dry cargo construction. Such a move would not mean any net savings in dollars but would mean the transfer of resources from a surplus area to an area of threatening shortages.

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Seattle port commission officials report that Seattle led all West Coast ports in percentage increase on exports of dry cargo with 77 per cent during the eight-month period ending Aug. 31, 1947, as compared to the same period in 1946.

The report showed Portland was second with 57 per cent and Los Angeles third with 16 per cent.

THE BABCOCK & WILCOX COMPANY motion picture "Steam Power for American Sea Power" was presented to The Society of Port Engineers, Los Angeles, at its December meeting with a talk on the construction of Babcock & Wilcox boilers by Walter B. Hill, San Francisco, marine manager of C. C. Moore & Company, Pacific Coast representatives of B&W. The dinner preceding the presentation of the picture was sponsored by the Calmo Engineering Company, Los Angeles, representatives of the A. P. Green Fire Brick Company, Mexico, Missouri.

Accompanying pictures show, left to right: J. W. MacPHERSON and J. K. VEEDER, Los Angeles, T. U. BELKNAP, Los Angeles and WALTER B. HILL, San Francisco, all with C. C. Moore & Company; J. HARRISON BROWN and HARLAN L. NICHOLS, Calmo Engineering Company, Los Angeles.

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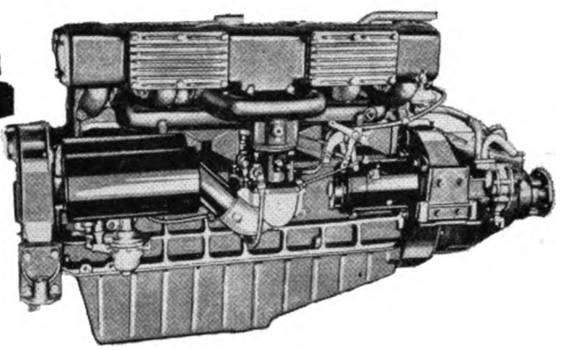

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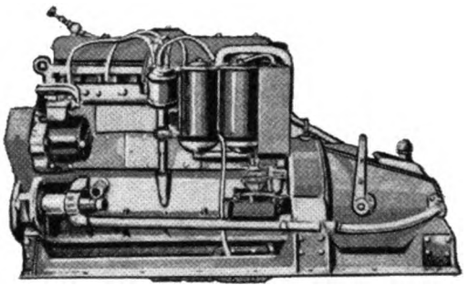

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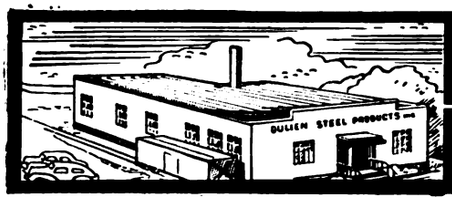

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Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912 and March 3, 1933, of The LOG, published monthly and semi-monthly in July, at Los Angeles, California, for October 1, 1947, State of California, County of Los Angeles, ss. Before me, a Notary Public in and for the State and County aforesaid, personally appeared Wm. B. Freeman, who having been duly sworn according to law, deposes and says that he is the Publisher of The LOG, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in Section 537, Postal Laws and Regulations, as printed on the reverse side of this form, to wit:

1. That the names and addresses of the publisher, general manager, editor, and business manager are: Publisher, Wm. B. Freeman, 124 West Fourth Street, Los Angeles 13, California; Editor, Harlan M. Scott, 124 West Fourth Street, Los Angeles 13, Calif.; Managing Editor, None; Business Manager, Sam M. Hawkins, 124 West Fourth Street, Los Angeles 13, Calif. 2. That the owners are: Miller Freeman Publications of California, 124 West Fourth Street, Los Angeles 13, Calif.; Miller Freeman, 124 West Fourth Street, Los Angeles 13, Calif.; Wm. B. Freeman, 124 West Fourth Street, Los Angeles 13, Calif.; Kemper Freeman, 124 West Fourth Street, Los Angeles 13, Calif.; Miller Freeman, Jr., 124 West Fourth Street, Los Angeles 13, Calif. 3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None. 4. That the two paragraphs next above, giving the names of the owners, stockholders ,and security holders, if any, contain not only the list of stockholders and security holders as they appear on the books of the company but also, in case where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. Wm. B. Freeman, Publisher. Sworn to and subscribed before me this 24th day of September, 1947. (Seal) Gladys H. Burech, Notary Public in and for the City and County of Los Angeles, State of California. (My commission expires December 13, 1948.)

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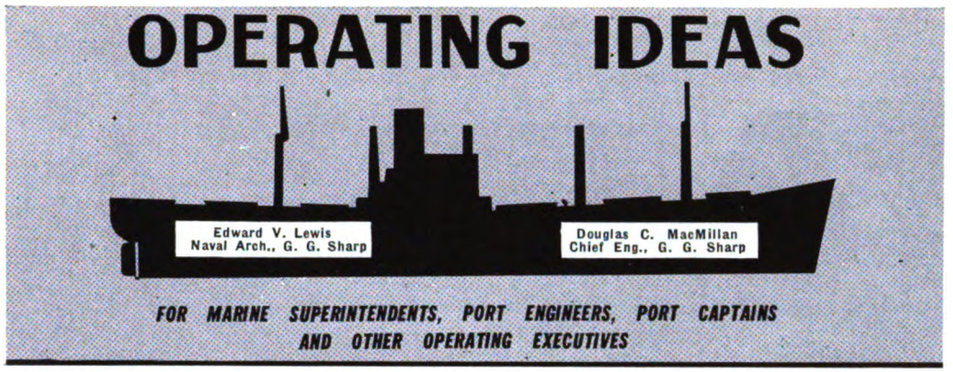


HOW TO DETERMINE DEADWEIGHT TONNAGE

Reconverted ships present a problem in determining deadweight. Here's how to figure it.

By **EDWARD V. LEWIS,**
Naval Architect
George G. Sharp

A subject which seems to be attracting increased interest among ship operators recently is that of deadweight. General cargo ships now appear to be more frequently called upon to use their full deadweight capacities, transporting heavy items such as steel plates and shapes, and ores of various kinds in addition to the lighter or "cubic" cargoes.

Interest is accentuated by the fact that the modern fleets which have been acquired by American lines are composed of vessels having a variety of origins. A group of C-3 type ships, for example, may vary in type (C3, C3-S-A1, C3-S-A2, etc.), in type, make and arrangement of propelling machinery, and in builder. Furthermore, many C3 ships were troopships, aircraft carriers and military cargo vessels during the war and have since been reconverted to merchant cargo ships at different yards under varying conditions. An operator then in surveying his post-war fleet may wonder what the actual deadweights of his ships may be, why the figures differ even for apparently similar ships, and possibly how he can increase the deadweight in certain cases.

In order to illustrate typical variations in deadweight of ships of a number of types, the following data have been tabulated. These ships were built at various shipyards and there are further differences not noted, such as extent of welding, number of deep tanks, extent of cargo handling gear, etc.

TABLE OF DEADWEIGHT VALUES FOR TYPICAL SHIPS

Type of Ship	*Type of Machinery*	*Refrigerated Cargo Cubic Ft.*	*Dead-weight Tons*
C1-B	Turbine	12,000	8,910
C1-B	Turbine	0	9,400
C1-B	Light Diesels	0	8,975
C2	Turbine	29,000	9,130
C2	Turbine	0	9,720
C2	Heavy Diesel	33,000	8,560
C2	Light Diesels	0	9,270
C3	Turbine	35,000	12,110
C3	Turbine	0	12,630
C3	Light Diesels	20,000	11,975

Definition of Deadweight

In commenting upon some aspects of deadweight from the point of view of the naval architect, it may be well first to discuss the meaning of the term. Unlike such characteristics of a ship as the principal dimensions, gross and net tonnages, cubic cargo capacity, etc. which can be ascertained readily by measurement and calculation, the deadweight is a more elusive quantity. The total deadweight, or simply the deadweight, may be defined as the weight carrying capacity of the ship, expressed in tons of 2240 lbs. It is obtained by subtracting the light ship weight from the displacement at full load draft and level trim. The light ship weight in turn is usually defined as the weight of the complete ship ready for sea but without fuel, fresh water or other liquids in tanks, nor cargo, stores, provisions, crew and their effects on board. The following items are included in the light ship weight; liquids in boilers, in machinery, and in fire and sanitary piping, spare parts, bosn's outfit and linen.

When the expression cargo deadweight is used, it refers to the cargo carrying capacity only, i.e. the total deadweight less the normal weight of fuel, fresh water, stores, provisions, crew, etc. on departure from port.

It should be noted that theoretically there is a deadweight figure for any draft which may be specified. Usually, however, the draft considered is the full load draft corresponding to the summer or the all-season load line assignment of the Classification Society.

Determination of Deadweight

The procedure followed by a naval architect in determining the deadweight of a ship is basically a simple one. Drafts are read carefully at a time when the ship is as near light as possible. Tanks are sounded and a list prepared of all weights on board which should not be considered a part of the light ship weight as defined above. However, unless care is exercised in the details of the procedure, an error of several hundred tons may result. Some of these details are:

1. Drafts must be carefully read, preferably in calm water. If there are small waves, good readings may sometimes be obtained with the aid of a glass tube at the surface connected to a rubber hose extending some distance downward which dampens the variation in water level somewhat within the tube. (An error of 1 inch in draft means an error of 60 tons in displacement and in deadweight for a C-3 ship.)

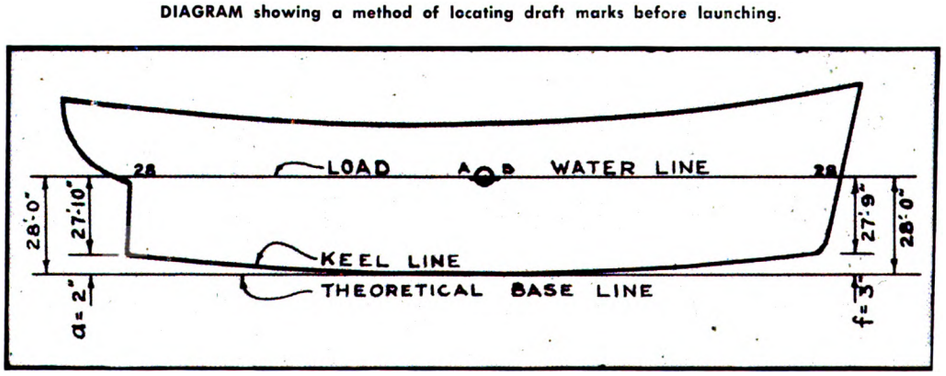
2. Amidship drafts must be obtained in order to determine the amount of hog or sag. (A sag of 2 inches involves a correction in deadweight of about 85 tons in a C-3 ship.) The amidship drafts can be read from draft marks if provided, otherwise they can be measured from the loadline markings, but with greater difficulty. They must be read port and starboard simultaneously in order that a change in heel will not affect the result.

3. The heights above the under side of the keel of all draft marks and of loadline disc amidships must be checked in drydock, otherwise care in items (1) and (2) will be of no avail.

4. Water temperature and density must be determined, using thermometer and hydrometer. (The difference in displacement between salt water and fresh water for a C-3 ship is 400 tons.)

5. The tank sounding tables used must apply to the specific ship in question, since a slight change in the

DIAGRAM showing a method of locating draft marks before launching.



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slope of a sounding tube or the location of a striking plate may make an appreciable difference in the sounding obtained.

Location of Draft Marks

It may be seen that the accuracy of a deadweight determination depends greatly on the accuracy with which the draft marks have been affixed. Modern practice calls for the numerals to be outlined by a bead of welding, so that if correctly placed when the ship is built they should remain correct through many repaintings. However, the method of locating the marks affects the determination greatly, particularly in the case of the all-welded hull, in which the ends usually rise during construction sufficiently to produce a sag of several inches in the completed ship.

The basis for locating the draft marks may be indicated by a quotation from the U. S. Coast Guard General Rules and Regulations: "All vessels of 50 gross tons and over . . . shall have the draft of the vessel plainly and legibly marked upon the stem and upon the sternpost. . . . The draft shall be taken from the bottom of the lowest part of the keel to the surface of the water, the bottom of the mark to indicate the draft in feet." In some cases the marks are placed with reference to the under side of the keel at the ends, without regard for any keel sag. The accompanying diagram illustrates in exaggerated fashion the placing of the marks in accordance with another common interpretation of the regulations. It can be seen that in this case the draft marks forward and aft do not indicate the actual drafts to the under side of keel line at the ends, but the drafts to a theoretical base line tangent to the keel at its lowest point, usually amidships. Using this procedure the mean of the end draft readings at any time will give the amidships draft, provided that the sag is the same as at the time the markings were placed on the hull. This method seems to be satisfactory to operators, since the amidship draft and its relation to the loadline markings is the principal concern in loading a ship. However, the assumption that there is no appreciable change in the amount of sag from the time the keel line is checked on the ways until the ship is afloat and loaded, or from one loading to the next, is far from true.

In making an accurate determination of deadweight, it is essential to know the actual drafts to the under side of keel forward, aft and amidships in order to establish the amount of sag (or hog) of the keel at that particular time. Hence the actual heights of the markings above the keel line should be carefully measured while the ship is in drydock. The correction factors marked (a) and (f) on the sketch will then be known and can be used to obtain the actual drafts at bow and stern at any time.

If the draft amidships measured in dry dock to the center of the loadline disc does not agree with the draft specified in the deadweight certificate, it probably results from the fact that the depth of the ship differs somewhat from that given on the construction plans. The loadline markings are of course placed by measurement downward from the deck rather than upward from the keel.

Changing Deadweight

A question which often arises is, can the deadweight of a given ship be increased? A large deadweight is not always important, for in many services ships operate for voyage after voyage without ever being "down to their marks." However, in routes where a high deadweight can be frequently utilized, means of increasing the deadweight become of real importance.

At the same time the tendency for a decrease in deadweight with age should not be overlooked. It results usually from the gradual accumulation of dirt, paint and miscellaneous unaccounted for items of stores, machinery spares, etc. A few tons each year may accumulate to an appreciable amount after 10 or 15 years. Hence, care in upkeep will prevent a decrease in the vessel's earning power as it becomes older.

There are two ways of increasing the deadweight of an existing ship. The first is by reducing the light ship weight, which would ordinarily involve a major change such as the removal of a refrigerated space or possibly the reconstruction of all or part of a deckhouse in aluminum instead of steel. Such modifications would normally be out of the question.

A second method of increasing deadweight is by increasing the draft. The normal full load draft of a ship is usually determined by one or more of the following factors: (1) Freeboard, (2) Scantlings, (3) Subdivision. Most modern American vessels have been designed for cubic cargoes and therefore have drafts based on scantlings rather than on the minimum freeboard permissible under the freeboard rules. Accordingly it is often possible to obtain an increase in the draft by suitable structural modifications, such as the reinforcement of the sheer strake by means of a doubling plate. This can be done quite readily by a repair yard at relatively small expense.

The subdivision of the ship should also be considered in connection with a proposed increase in draft. Although there are no legal requirements for a cargo vessel, most modern ships built in this country have been designed to attain a one-compartment standard. In some cases an increase in draft might affect this standard adversely.

An example of increasing deadweight is a typical C-3 cargo ship with a molded draft of 28′-6″ and deadweight of 12,200 tons. The addition of a sheer strake doubler resulted in a deeper draft of 29′-4″ molded and a deadweight of 12,800 tons, an increase in deadweight of 600 tons. If deadweight cargoes are available in one direction for every voyage, the cost of the work might be paid for in less than a year. However, it should be noted that it would not be advisable to make modifications to a ship merely for the sake of having a higher deadweight figure. Unless the extra deadweight can be utilized frequently it will not pay for the cost of the necessary changes to the ship.

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FUEL ECONOMY

By DOUGLAS MacMILLAN
Chief Engineer
George G. Sharp, Naval Architect, New York

A reawakened interest in fuel economy has been noted among operating engineers. This may be due to the recent increases in the cost of fuel. This interest is also evidenced by the application of combustion control equipment to war-built ships not previously equipped.

Both the interest in fuel economy and the application of control equipment, raises the question, "How shall we measure fuel economy?" Fuel economy is usually referred to as pounds of fuel per SHP per hour or pounds per kilowatt hour, and in shore plants it is normally referred to as a heat rate, or B.T.U.'s per kilowatt hour. The fuel can generally be measured relatively accurately by the use of the ship's meters which may be checked periodically against settling tank soundings. Also, the fuel can be corrected for gravity, heat content, and temperature to refer it to standard conditions, and this is all generally done by the operating engineer when keeping the engine log.

The measure of power output, however, presents another problem. For electric drive ships, as for shore power plants, a measure of output is available which may be used in determining performance, this being the kilowatts or kilowatt hours as determined by a meter. This meter also may be calibrated periodically and gives a reliable indication of output. However, steam turbine propelled ships offer a distinct problem to the operating engineer in determining the relative performance of one ship compared with others in the fleet and with the trial or standard performance of the particular type of ship. The output cannot be measured for a steam turbine propelled ship unless a torsion meter is fitted, which is very seldom the case.

Some superintendent engineers attempt to determine the horsepower from the turbine performance curves. These curves may be relatively accurate for non-bleed

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operation, if the turbine has been water rate tested, and if the clearances are maintained. However, most marine power plants use bled steam in varying amounts, from a number of extraction points, and with other variables that change daily if not hourly. Also, improper settings of the reducing and back pressure valves associated with the auxiliary exhaust and bleeder steam system may result in uneconomical performance that will not be detected by routine power estimates based on turbine curves. Other engineers use fuel per mile to evaluate performance, thus eliminating the necessity for determining SHP. This also has some disadvantages. The speed made, or the distance covered when the ship is propelled at constant SHP (and assumed constant fuel rate) will vary with resistance (displacement, weather, fouling, water temperature, etc.) and ocean currents, thereby resulting in different values of fuel per mile, although the fuel rate (pounds per SHP per hour) remains constant.

Propeller is Dynamometer

In our experience in dealing with merchant ships, we have found that the propeller is a very convenient dynamometer that can be used to determine power or distance, which may then be used to calculate fuel per SHP per hour or fuel per engine mile, respectively. In order to do this, however, the propeller characterization must be known, preferably over a wide range. This characterization may be obtained from model tests or trial observations, the latter being preferable.

These characterizations will generally show, for a given set of conditions, that: $SHP = C \times RPM^3$, where C is practically a constant, whose value depends largely on displacement, but which is also slightly modified by other factors affecting resistance of the ship, such as fouling, weather, temperature, etc. The extent to which these modify the constant is not great under normal conditions. It has been found for a well designed ship and propeller that an increase in ship resistance of say 20 per cent, will, at a given RPM, produce an error of about 4 per cent in a power estimate based on RPM. An error of this type is not serious when making comparisons, since weather conditions, fouling, etc. will generally average about the same for ships in the same service. The extent to which ship displacement modifies the constant is known from the characterization, and the proper value can be used depending upon the observed displacement.

Examination of the propeller characterizations will also show, for a given set of conditions, that: $SHP = K \times speed^3$, where K is practically a constant, whose value depends largely on displacement, but which is also slightly modified by factors affecting resistance. The fallacy of using this relation in lieu of the one discussed above, is that speed through the water, which is all the propeller knows, is not available to the engineer at sea.

VC2-S-AP3—VICTORY SHIPS—SPEED, POWER AND FUEL

Standardization Trials

Speed	R.P.M.	S.H.P. (S-E)	S.H.P. (F)
Light Draft—Displacement = 5270 tons			
9.52	40.68	680	642
14.43	60.30	2,163	2,044
17.70	73.75	4,315	4,073
18.87	80.81	6,175	6,019
20.69	92.64	9,858	9,609
Medium Draft—Displacement = 10,077 tons			
10.80	43.79	1,066	1,044
15.13	63.10	3,242	3,201
17.04	72.95	4,884	5,034
18.04	79.53	7,075	7,073
18.81	87.43	10,460	10,392
Heavy Draft—Displacement = 14,837 tons			
11.83	50.83	1,819	1,728
14.49	63.23	3,817	3,455
16.45	73.86	5,963	5,740
17.60	81.81	8,029	8,434
18.39	88.90	11,131	11,570
Astern	57.21		2,675

Fuel Trials (Heavy Draft)

Average SHP	1,958	3,860	6,623	8,610	9,403
Fuel Rate, #/SHP/Hr. (Average)	.897	.699	.624	.600	.602
Fuel Rate, #/SHP/Hr. (Leveling Off)	.890	.696	.619	.592	.600

(S-E) = Smith-Erickson type power meter.
(F) = Ford type torsionmeter.

Victory Ship Data

We have selected the U. S. Maritime Commission Design VC2-S-AP3 Victory Ship as an example in considering the application of the above, since many of these ships are in service and since very complete trials were run, thereby enabling us to determine the propeller characterizations. These trials were conducted at three different displacements ranging from light ship to fully loaded, and the results have been published by the U. S. Maritime Commission in the Trial Report of the ss BLUEFIELD VICTORY. The data presented therein has been faired and cross faired to produce Figures 1 and 2.

Figure 1 gives the relation of SHP to RPM for various displacements. Entering with RPM and displacement the SHP can be determined. The result is relatively accurate; however, heavy weather or fouling will produce errors as noted above. Figure 2 gives the relation of fuel consumption per engine mile to RPM for various displacements. It is based on the fuel consumption measured on trial, oil of 18,500 B.T.U. per pound and 338 pounds per barrel, and a propeller pitch of 22.9 feet.

Figure 2 was produced as follows:

(a) For a given RPM and displacement, the SHP was determined from Figure 1.

(b) Using this SHP, the fuel consumption in barrels per hour was determined from the trial results.

(c) Engine miles per hour was calculated from the given RPM and the propeller pitch.

(d) The fuel consumption, barrels per hour, was divided by engine miles per hour to give barrels per engine mile.

(e) The above was repeated until sufficient points were obtained to produce the graph.

We had occasion to make some observations on one of these ships in service, and the following was obtained during a period of normal weather. Each spot rep-

(Continued on Page 72)

Figure I

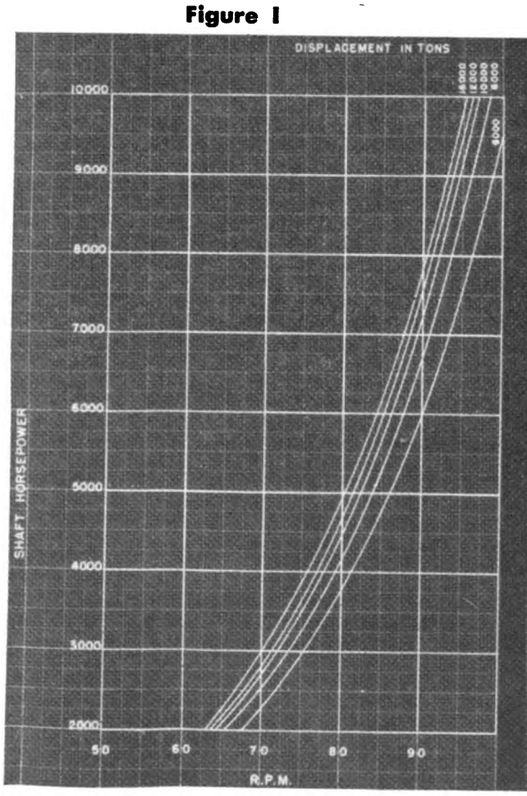
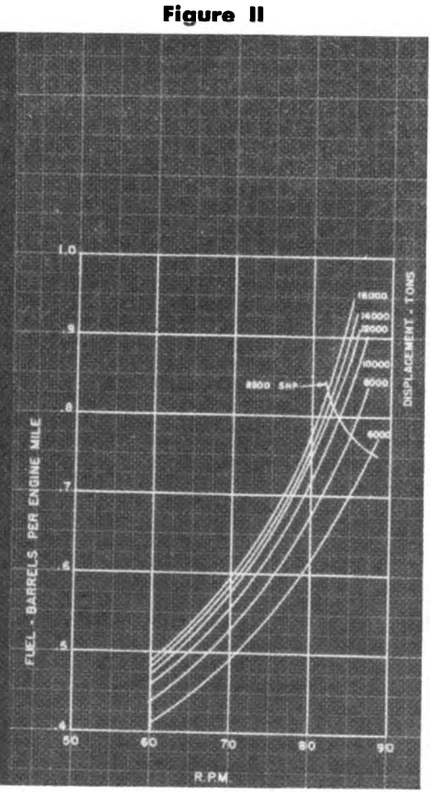


Figure II



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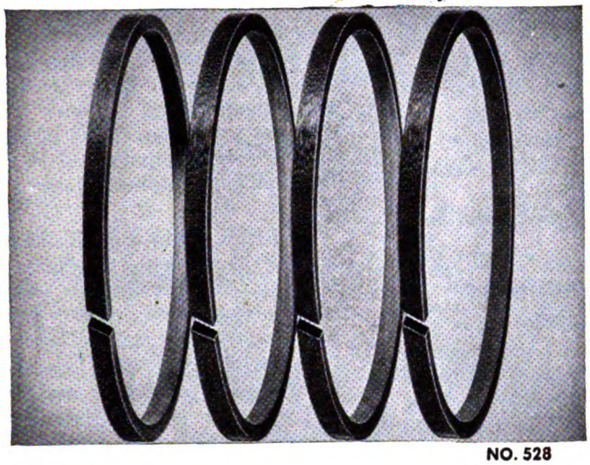
Floating Type



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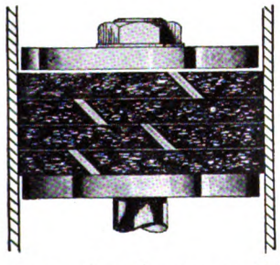

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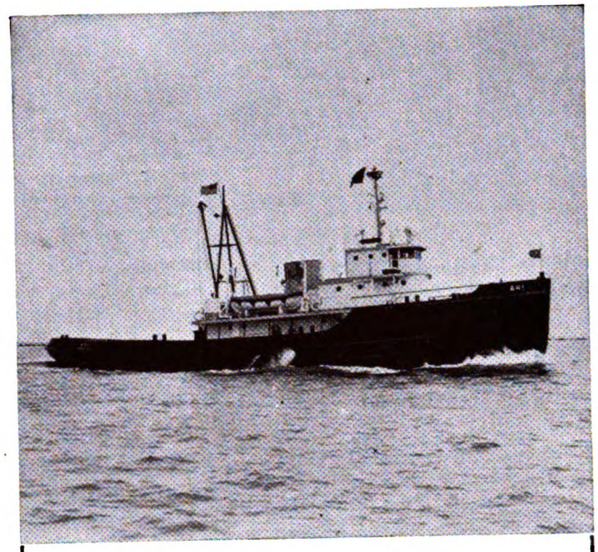

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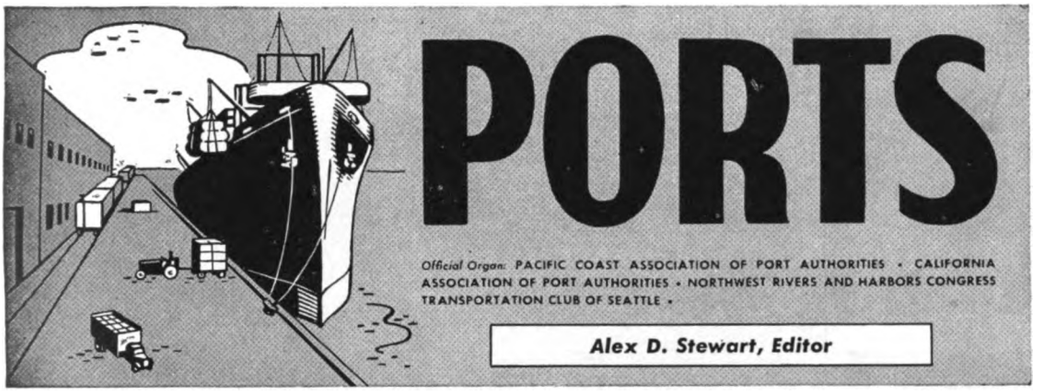

San Francisco Wins Approval For Foreign Trade Zone

San Francisco has received approval from the Alternate Federal Trade Zones Board in Washington for the establishment of a Foreign Trade Zone.

The recommendation now goes to the full Foreign Trade Zones Board, composed of the Secretaries of Commerce, Treasury and Army.

According to present plans, the foreign trade zone would be located at pier 45, Fisherman's Wharf, used during the war by the Army Transport Corps.

Under the free zone system, now in effect at New Orleans and New York, foreign cargo may be unloaded and stored, duty-free, pending later entry into the United States or transhipment after further processing to other countries.

The San Francisco Chamber of Commerce and the state board of harbor commissioners have long advocated establishment of such a free zone here. A similar zone is also being sought by Los Angeles. Federal authorities in the past have declined approval, on the ground of lack of proper security against smugglers for the sites offered by the harbor authorities.

As planned, only part of pier 45 will be used for the present, but all of the big structures will be fenced off and placed under patrol, making the area an international island, for customs purposes, within the city limits.

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Port Editor Receives Commendation

RESOLUTION NO. I

Commending the long and unselfish service accorded by Alex D. Stewart to the northwest rivers and harbors congress throughout the many years in which he served as secretary to this association.

WHEREAS, Alex D. Stewart has served continuously as secretary of the Northwest Rivers and Harbors Congress since the year 1933; and

WHEREAS, through his affiliation with "The LOG" he has afforded opportunity for an unusual publicity of the aims, efforts and workings of the Northwest Rivers and Harbors Congress;

NOW, THEREFORE, BE IT RESOLVED at this, the Twenty-second Annual Convention of the Northwest Rivers and Harbors Congress in session assembled at The Dalles, Oregon, on this, the Twenty-fifth day of October, 1947, that by this resolution the officers, past and present, the delegates and the entire membership of the Northwest Rivers and Harbors Congress do hereby give expression of their sincere appreciation.

NORTHWEST RIVERS AND HARBORS CONGRESS
/s/ Harry J. Appling, Secretary

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Port of Kalama Announces Lease of Port Property

A 30 year lease of port owned waterfront property to the Columbia Veneer Company has been announced by the Port of Kalama, Washington. The Columbia Veneer Company plans to manufacture plywood and special hardwood veneers. An initial unit, costing $150,000, is under construction. Additional manufacturing units to a total of five are planned.

The payroll of the Columbia Veneer plant will supplement other payrolls of industry located on port property including a shingle mill, the log reloading operation of the port, and the shipbreaking operation of the Kalama Port and Terminal Company.

The Kalama Port and Terminal Company, a Dulien Steel Company subsidiary, under the management of James Childs, has plans for development of water commerce and industry in addition to the shipbreaking activities which promise much for the future growth, beauty and prosperity of the community.

The port district managed reloading operations is an interesting outgrowth of Kalama's location. Kalama is 60 miles from the mouth of the Columbia and 40 miles down river from Portland where the Columbia swings from a north and south course to an east and west bearing to place Kalama as the most accessible port on the Columbia for transshipment by land to Grays Harbor and Puget Sound of water shipments originating at upper Willamette and Columbia river points. Logs from the Tillamook, Mollala, Wind River, White Salmon and other timber stands in Oregon and Washington are dumped into the Willamette and Columbia rivers from rail cars and trucks and towed to Kalama. There they are reloaded on rail cars for delivery to Grays Harbor, Olympia and Tacoma. A fast increasing operation, 70,000,000 board feet of logs were transshipped at Kalama in 1947, or double the volume handled in 1946.

In its early history Kalama was the Western terminus of the Northern Pacific Railway. The port district was organized in 1920, waterfront property was acquired and a waterside terminal erected in 1922. Lumber, shingles, ties, logs and squares for Oriental, coastwise and intercoastal markets were loaded. Rebuilt since 1922, the port terminal is now leased to the Kalama Port and Terminal Company. Equipment includes a 125 ton capacity sheer leg, erected during the war for loading diesel train units aboard ships destined for Russia. Available for lease as industrial sites at Kalama is a four mile length of waterfront property immediately adjacent to tracks used by four transcontinental rail lines and the main North and South Pacific Coast highway. Nearby are sources of pure fresh water and ample hydro-electric power. Port commissioners at Kalama are Otto Englemann, a retired baker; George Jaeger, realtor; and A. E. Jaeger, banker. Abe Moawad, long associated with Northwestern Electric Company at Kalama, resigned from that work to become port manager in early 1946.

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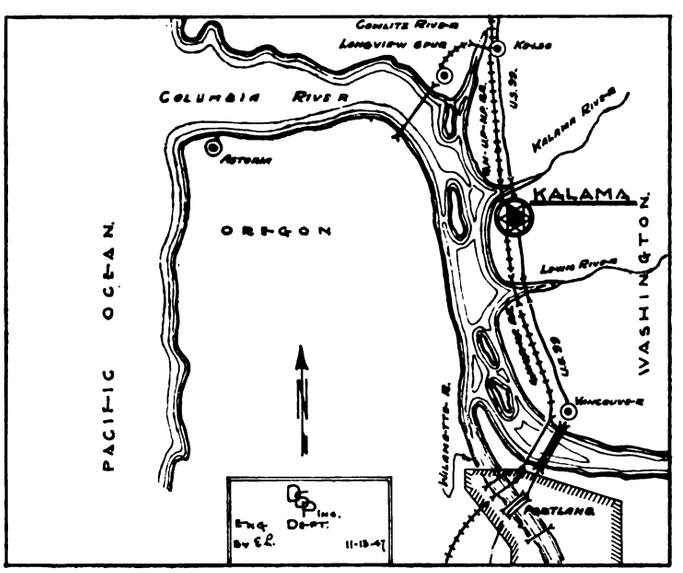
The Port of Oakland handled nearly three million tons of cargo from January 1 to September 30 of this year, according to a statistical report made to A. H. Abel, port manager and chief engineer.



PORT OF KALAMA, Washington, the most accessible port on the Columbia for transshipment by land to Grays Harbor and Puget Sound of water shipments originating at upper Willamette and Columbia River points.

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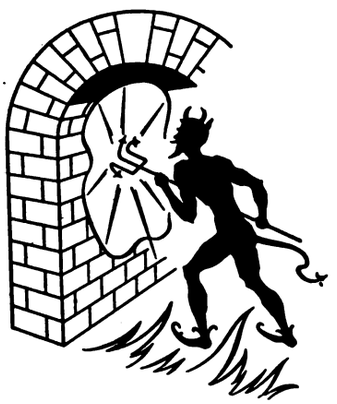

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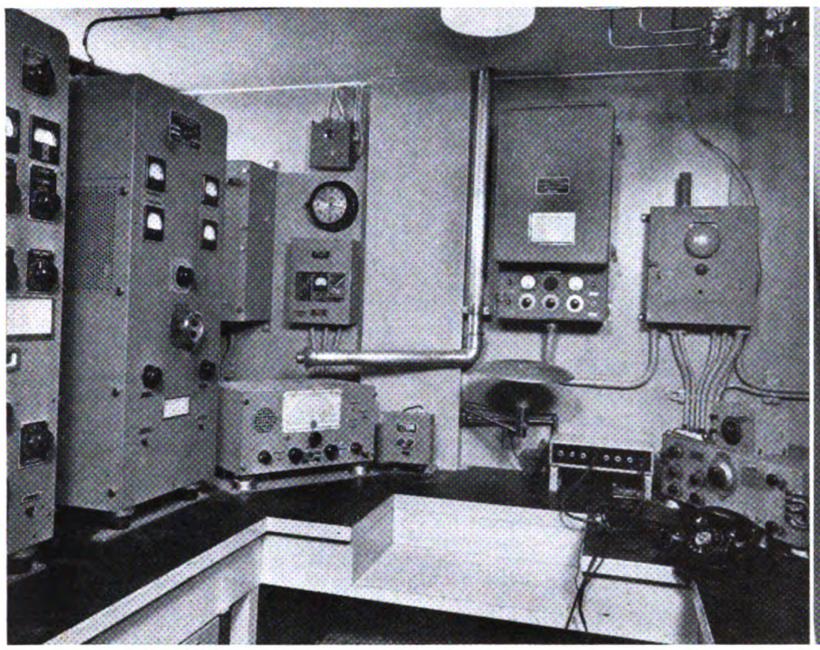
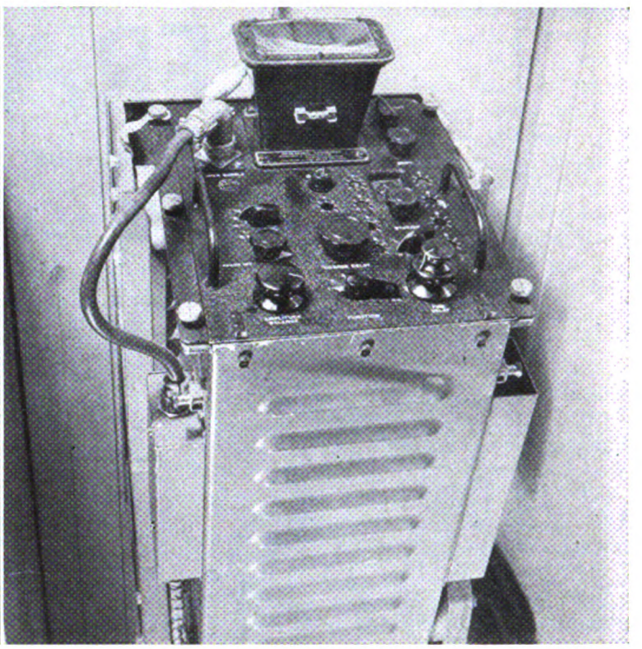
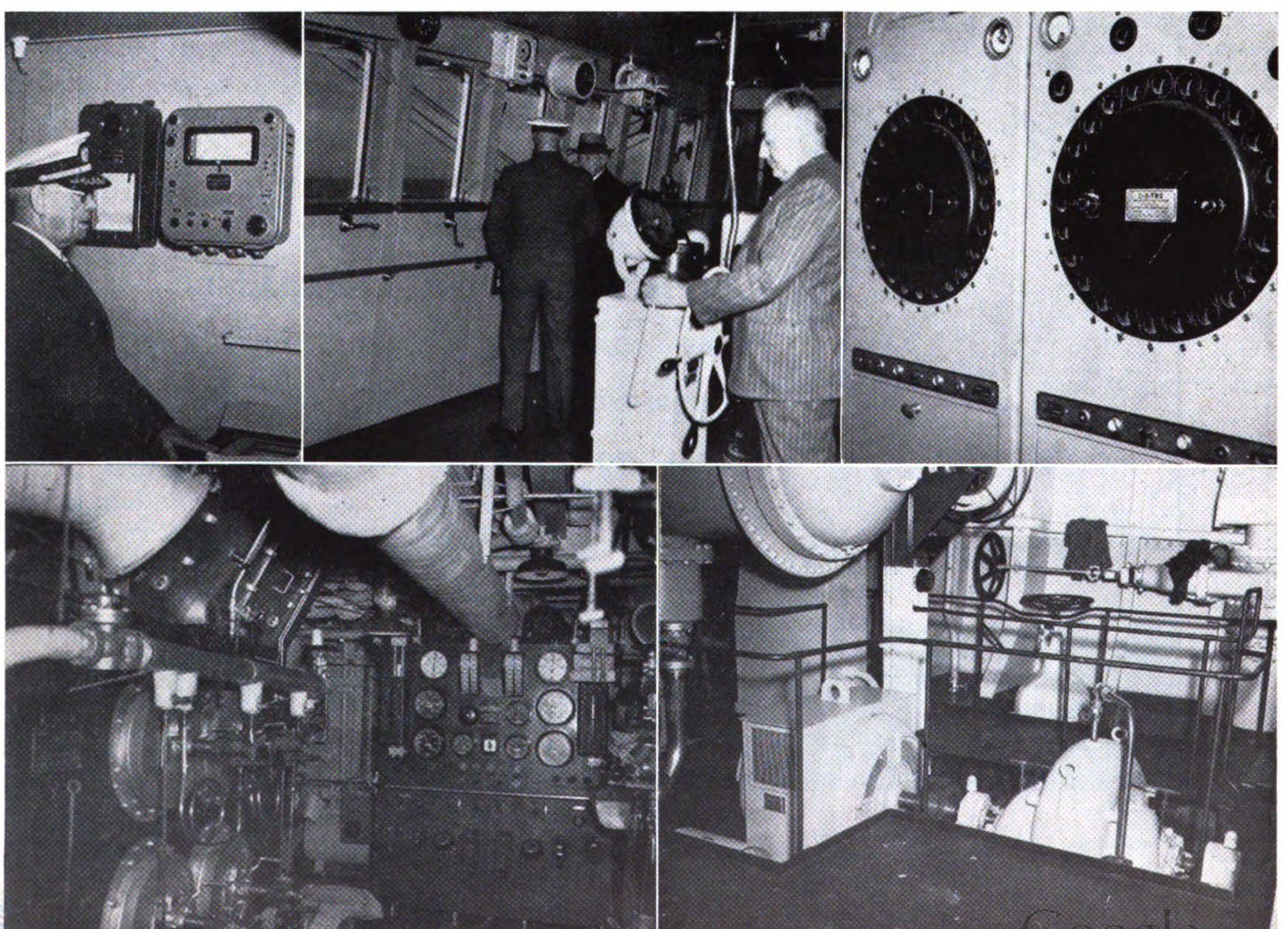




SAFETY MEASURES ABOARD THE CLEVELAND . . . Left, the radio control room with RCA equipment. The following Radiomarine equipment is aboard: Model ET-8010, 200-watt Main Radiotelegraph Transmitter, Model ET-8019, 200-watt High-Frequency Radiotelegraph Transmitter, Model ET-8003, 50-watt Emergency Radiotelegraph Transmitter, Model AR-8503, Intermediate and Low Frequency Radio Receiver, Model AR-8600, Automatic Radio Alarm, Model AR-8703-B, Radio Direction Finder, Model LR-8801, Loran Receiver, shown at right.

ABOARD THE CLEVELAND . . . Top row, left, CAPTAIN HENRY NELSON, Master of the PRESIDENT CLEVELAND, inspecting the Submarine Signal Fathometer recorder and over his shoulder is the Sperry Gyro course recorder. Center, CAPTAIN E. MOHR, pilot, at the control unit of the Sperry Gyro pilot. Right, C-O-Two smoke detection indicators installed by Ets-Hokin & Galvan, San Francisco.

Bottom row, left, Hagan control board at rear and Combustion boiler, with Todd burners, at extreme left; right, Worthington main circulating pump driven by Westinghouse motor.



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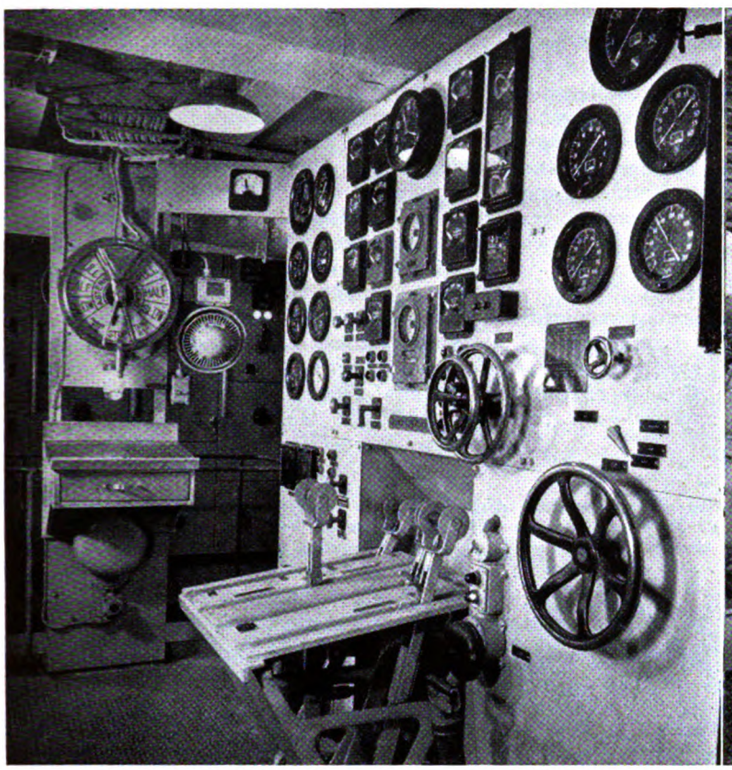
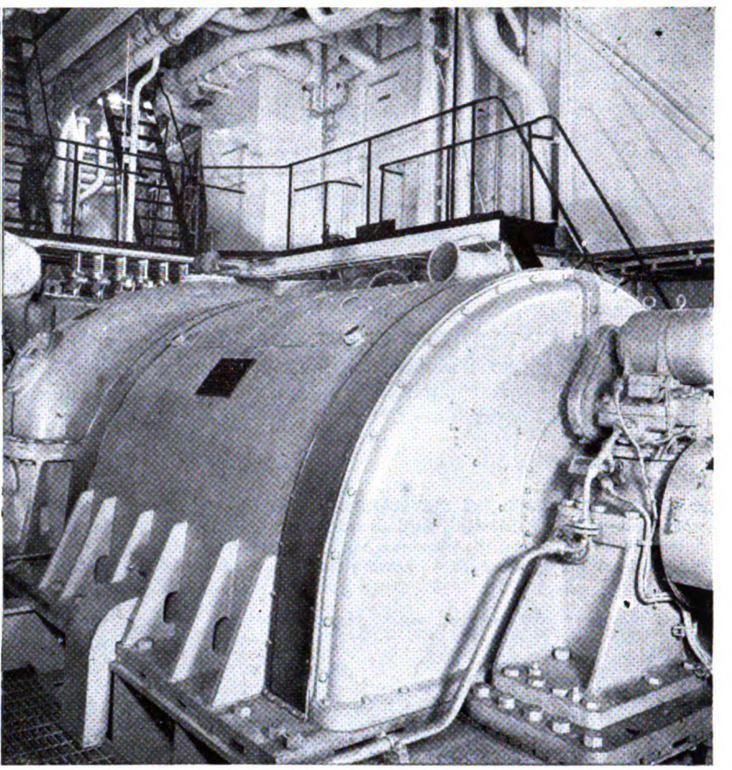
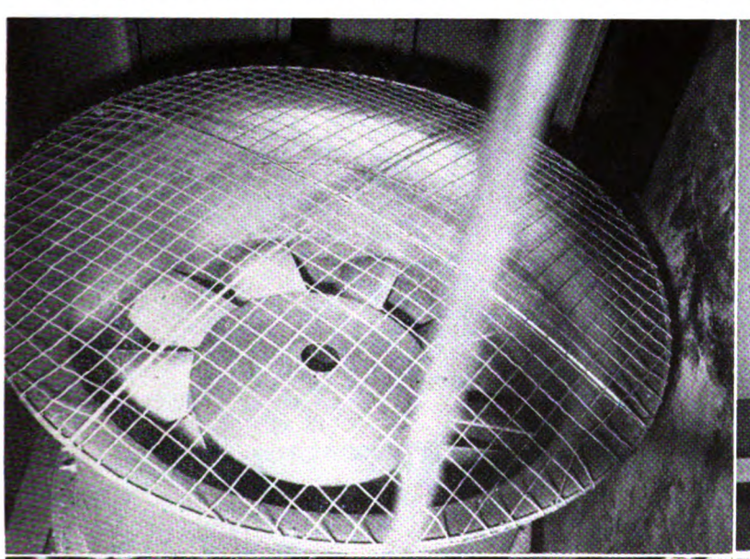
SS PRESIDENT CLEVELAND

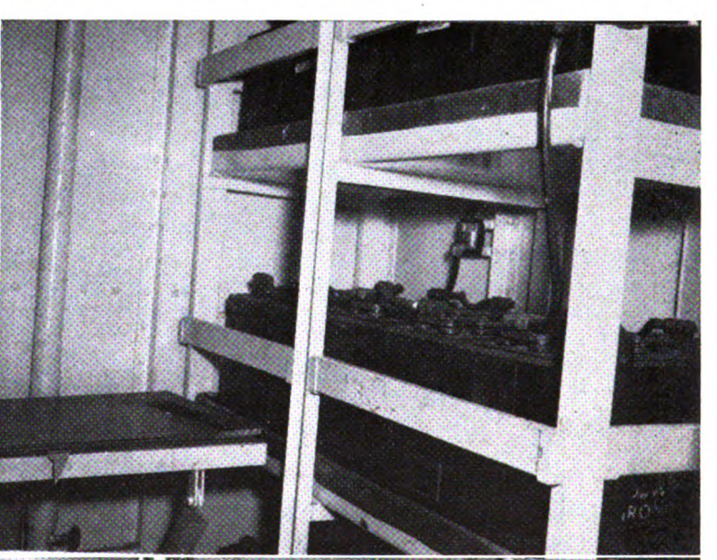


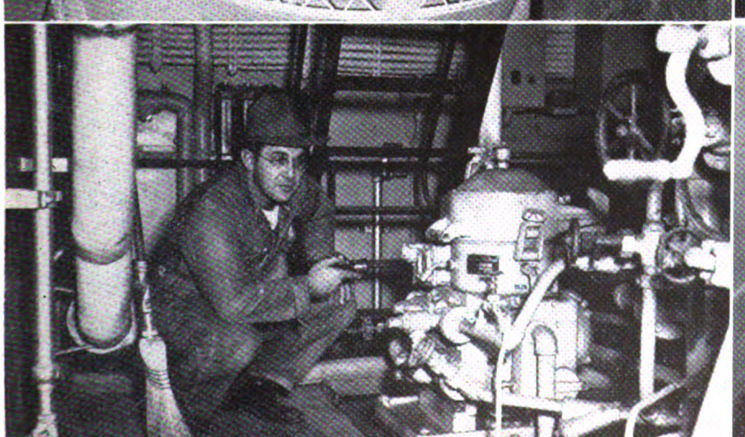


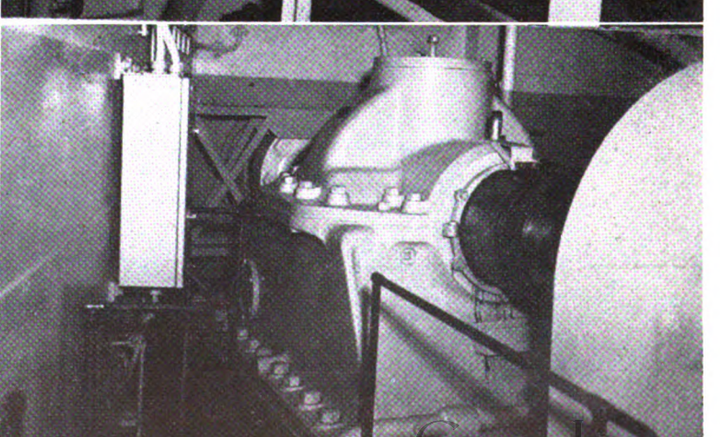
ONE OF THE TWO engine rooms of the SS PRESIDENT CLEVELAND, shows, left, General Electric's main switchboard . . . two control stands with levers, contractors, meters, protective devices and steam gauges . . . these main boards control the propulsion equipment. There is one complete main propulsion equipment in each of the ship's two engine rooms, the electrical power from either or both engine rooms can be used to propel the ship. Right, General Electric main generator . . . 6890 KW, 3500 volts, 3 phase, 60 cycle, unity power factor, 3600 RPM.

MORE EQUIPMENT ABOARD THE CLEVELAND . . . Top row, left, L. J Wing Company radial axial fan in forward stack; right, racks of Exide batteries. Bottom row, left, FRED JENNINGS, Chief Engineer of the PRESIDENT CLEVELAND, inspecting the DeLaval oil purifier; right, Kingsbury thrust bearing on port shaft.









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SS President Cleveland

(Continued from Page 28)

These three hatches are equipped with the newest type Kathabar de-humidifying equipment especially designed for cargoes susceptible to damage from moisture. The smaller after holds (Numbers 6, 7 and 8) will be mechanically ventilated with a complete change of air every 30 minutes.

Frick Freon-12 systems and Westinghouse Marine compressors service both the cargo refrigeration and ship's service compartments.

Another of the PRESIDENT CLEVELAND's unusual cargo features are the hinged and folding metal hatch covers in the trunkways and tween decks. Several types are used including those with a single center break which are lifted up to fasten flat against the trunkway as well as one which folds back upon itself (both fore and aft) and then flattens back in upright positions.

Powering the gear at overall hatches will be ten single drum and six double drum electric drive winches manufactured by Lake Shore Engineering and powered by Westinghouse. Number 2 and 3 hatches have four 10-ton booms apiece while numbers 1, 6, 7 and 8 have two five ton booms each.

Complete Medical Unit

In keeping with the rigorous standards of American President Line's medical department—the only steamship line holding the American College of Surgeon's certificate of approval—are the ship's hospital facilities. These are mechanically ventilated and have sound-insulated walls separating the eight rooms which comprise these quarters from adjacent passenger accommodations. The unit consists of three 2-bed wards—men's and women's and isolation—each with a bath, as well as a crew's 6-bed ward with bath, a fully equipped operating room, a dispensary, diet kitchen and quarters for a medical attendant.

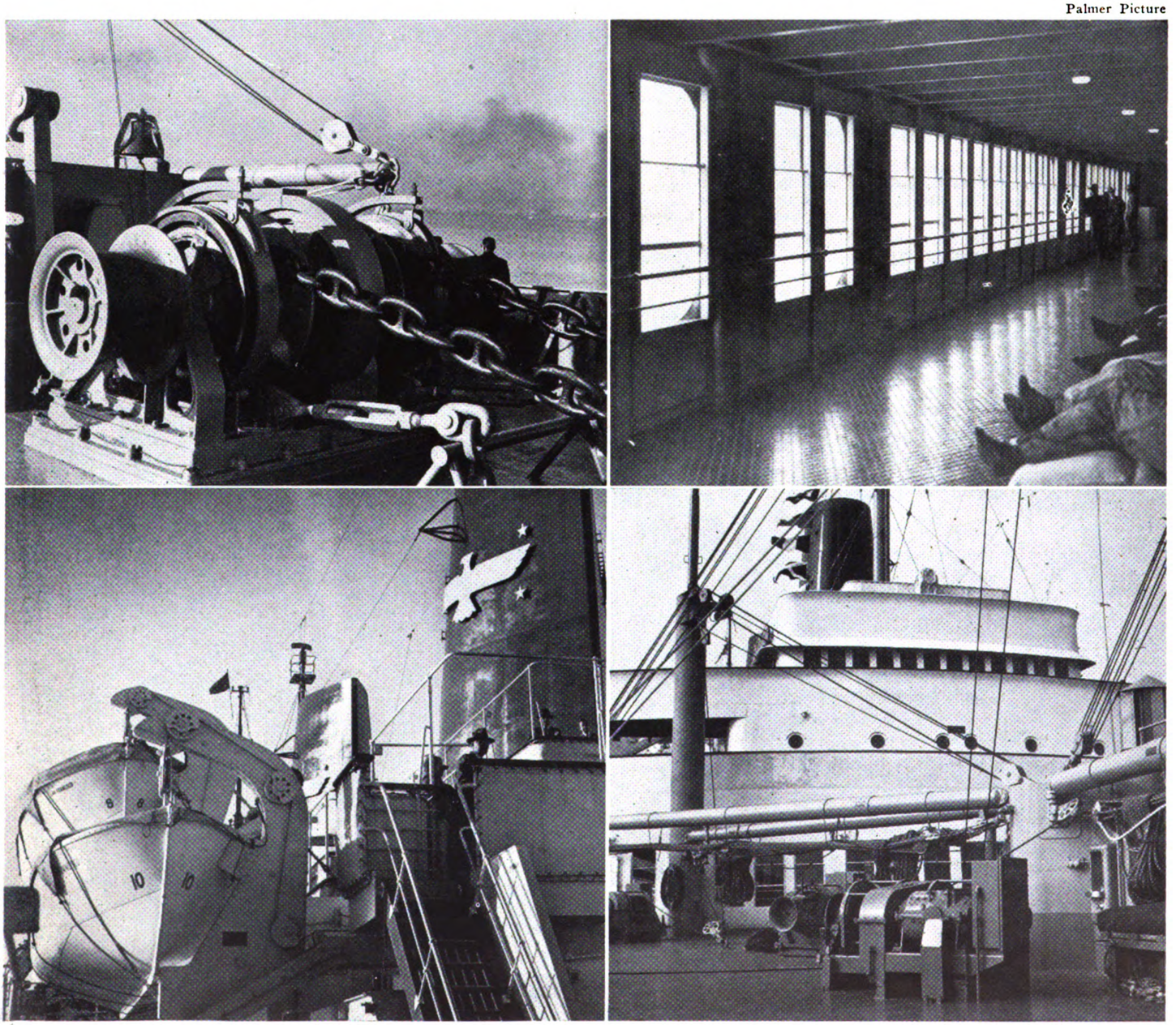
In addition to the hospital unit, the ship's surgeon has offices on A deck—a consulting room with complete facilities for examination.

Indicative of the completeness of the ship's medical equipment are such items as an obstetrical bed and a new type of General Electric portable X-ray.

Although one hospital bed for every

DECK EQUIPMENT ABOARD THE CLEVELAND . . . Top row, left, Naco anchor chain; top right, the veranda deck showing the Kearfott windows. Dex-O-Tex underlayment was used on all the ship's steel decks. Bottom row, left, Welin lifeboats and davits, the entire assembly—davits, trackways, winches and lifeboats—made of aluminum. Welin developed the aluminum units with the help of Alcoa . . . General Electric radar antenna in background (installed by Ets-Hokin & Galvan); right, the bridge from the forward deck showing Kearfott windows in the wheelhouse . . . the cargo winches were made by Lake Shore Engineering Company.

Palmer Picture



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200 persons is considered by public health authorities to be adequate for the needs of an average community, the PRESIDENT CLEVELAND has one bed for every 73 persons, allowing for a capacity load of passengers and a full crew complement.

The mighty ship will be commanded by Captain Henry Nelson, an experienced Dollar Steamship Company and American President Lines' master. Captain Nelson, who first joined the Dollar Steamship Company in 1925 and served continuously in that company and American President Lines rose to command APL's flagship, the PRESIDENT COOLIDGE. He is now senior captain and commodore of the large APL fleet.

During World War II, while master of the PRESIDENT COOLIDGE, Captain Nelson skillfully directed rescue operations when the ship, with five thousand troops on board, struck a mine and sank in the Southwest Pacific in 1942. Only two casualties resulted from the disaster.

Captain Nelson's most recent exploit, revealing the high quality of his seamanship, came in March, 1947 when, as master of the American President Lines' GENERAL W. H. GORDON, he participated in the rescue of crew members on the stricken tanker FORT DEARBORN north of Honolulu.

Photographs accompanying this article on the ss PRESIDENT CLEVELAND were taken by The LOG, Palmer Pictures, A. Sponagel, Cal-Pictures and Rene Duzac of the Bethlehem Shipyard.

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WASHINGTON Reporting

(Continued from Page 35)

by National Officers of the Legion and representatives from Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota and Pennsylvania, a panel of government and industry leaders discussed the foremost problems confronting the American Merchant Marine.

Among those attending the Conference were: Maritime Commissioner Raymond S. McKeough; Vice Admiral E. L. Cochrane, President of the Society of Naval Architects and Marine Engineers, and member of the President's Advisory Committee on Merchant Marine; Rear Admiral C. W. Callahan, Chief, Naval Transportation; and Commodore H. C. Shepheard, Assistant to the Commandant of the U.S. Coast Guard. Representing the industry were Frazer A. Bailey, President of the National Federation of American Shipping; and H. Gerrish Smith, President of the Shipbuilders Council of America.

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Panama Canal Toll Reduction Proposed

A proposal that Panama Canal tolls be reduced to cover only the cost of commercial operation and that they be levied both upon commercial and national defense vessels equally, has been made by the steamship industry.

Frazer A. Bailey, President of the National Federation of American Shipping, pointed out that over the life of the Panama Canal toll revenues exceeded expenses attributable to transiting by more than 274 million dollars, an amount enough to amortize all commercial construction costs and leave a surplus of about two million dollars, provided that no interest is charged by the U.S. government on funds advanced for this purpose.

"We think it is a simple statement of fact," Mr. Bailey said, "that the Canal was constructed for the dual purposes of commerce and national defense. We suggest that it would be a small enough contribution to have these interest charges placed against national defense."

He declared that, "We do not believe it is the intention of the Congress that the Panama Canal shall be a revenue earner, especially at the expense of an American industry which is struggling for economic survival."

Canal tolls as presently constituted are just another burden upon American domestic shipping which is having a difficult time in returning to its pre-war level, the Federation president pointed out.

At the same time proposals that the Panama Canal be converted into a sea-level waterway have been submitted to President Truman by Governor J. C. Mehaffey of the Canal Zone. This work could be done at an estimated cost of $2,482,000, according to the Governor.

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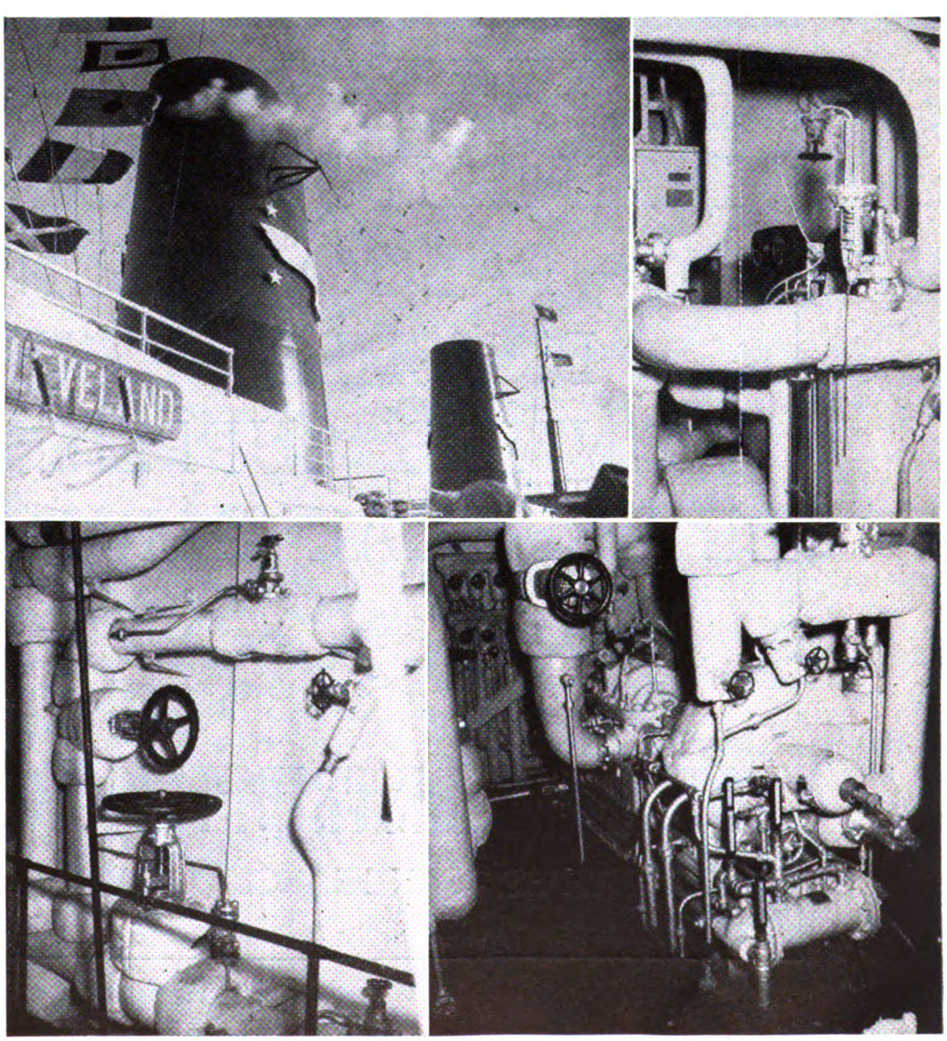
Radar License Requirements Opposed

At a meeting called by the Federal Communications Commission on November 25th, the shipping industry unanimously expressed its opposition to the setting up of any license requirements for the operation or maintenance of shipboard radar equipment in the regular services. Indications at the meeting were that in the event the requirement for such a license should not be waived, a public hearing would be requested by the industry.

Section 318 of the Communications Act requires an appropriate license for the operation of any radio transmitter. It also

(Continued on Page 65)

ABOARD THE CLEVELAND . . . Top row, left: The Leslie-Tyfon whistle blows aboard the PRESIDENT CLEVELAND; right, Leslie temperature regulator for salt water heater and contaminated water evaporator. Bottom row, left, at top and in lower right hand corner are two of the twenty two Leslie pressure reducing valves aboard the CLEVELAND for the auxiliary system, for air ejectors, for steam heating system, and for steam to laundry and dispensary; right, Turbine-driven Ingersoll-Rand main feed pump, with the Ross oil cooler at the bottom and a portion of the Leslie pump governor unit showing at the top.



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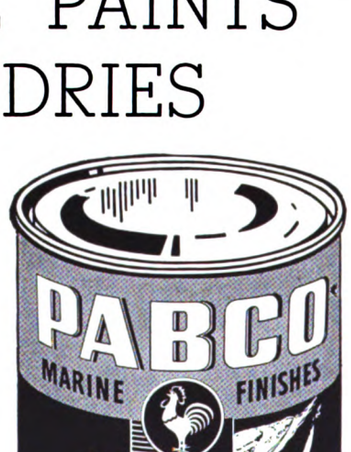

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Washington Reporting

(Continued from Page 63)

provides that the FCC may waive this requirement in certain cases. Up to the present no licenses have been required for the operation of shipboard radar installations which have been installed under Experimental Class 2 licenses. Radar rules for the operation of marine radar on a regular service basis which go into effect on December 10th contain no provision for waiving the operator requirement contained in the Communications Act.

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Joint Committee Functions

The executive committee of the newly formed Joint Committee for the American Merchant Marine has submitted to member organizations for ratification a "preamble" and a "declaration of policy."

In the declaration of policy the executive committee proposed that:

1. It keep the associated organizations of the Joint Committee informed as to the general problems affecting American maritime interests.

2. It keep the associated organizations of the Joint Committee informed of the respective policies which the individual organizations have adopted, and the most acceptable of those policies as indicated by the consensus of opinion of the affiliated organizations through which these individual programs can be coordinated and brought to the attention of the American public.

3. It authorize for presentation in the name of the Joint Committee for the American Merchant Marine those policies which are mutually acceptable.

4. The function of the Executive Committee shall be to mobilize support of the affiliated organizations for those acceptable policies.

The Joint Committee for the American Merchant Marine is composed of fourteen organizations representing all segments of the maritime industry. Members of its Executive Committee are: John Green, president of the Industrial Union of Marine and Shipbuilding Workers of America; Harold J. Harding, national secretary of the Propeller Club of the United States; Frank McKee (chairman), Washington representative of the San Francisco Chamber of Commerce; Winder Harris, vice president, Shipbuilders Council of America; Samuel Duvall Schell, vice president, National Federation of American Shipping; John Frey, president, Metal Trades Department, American Federation of Labor; Verne Sullivan, Transportation Department, Chamber of Commerce of the U.S.; Stephen C. Manning Jr., chairman of the Joint Committee, U.S. Maritime Commission; and John Forney Rudy, executive secretary of the Joint Committee, National Federation of American Shipping.

Customs and Immigration to Remain Ashore

Proposals to examine passengers and their baggage at sea have been discarded as impractical by the Customs Bureau and Immigration Service. Officials of these departments had been studying a plan under which immigration and customs examiners would shuttle back and forth across the Atlantic on passenger vessels in order to expedite clearance of passengers.

In its objections Customs pointed out that it would be impossible to inspect baggage stored in ships' holds, and that savings in time for the average passenger would be negligible.

Immigration men said that shortage of personnel precluded the possibility of sending men to sea on round-trip voyages that average from two weeks to more than a month; whereas six immigration inspectors ashore could clear 1,200 passengers within eight hours.

The British QUEEN MARY and QUEEN ELIZABETH have for some time carried two customs officers and one immigration officer on each crossing. Announcement is made one day after departure from New York that the officials on board the vessel are ready to collect duties and taxes from first-class passengers, and to issue immigration clearance to all but tourist-class aliens. Passengers are urged to make their written declarations while at sea to save standing in line after docking.

British officials believe that this system is advantageous in expediting clearance of passengers.

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Maritime Commission Studying Tramp Shipping

The subject of American-flag tramp operations, which was given an unenthusiastic report by the President's Advisory Committee, is now receiving specific study by the Maritime Commission. A report prepared by Lloyd Tibbott, assistant chief, Division of Regulation, U.S. Maritime Commission, is before the Commission's Committee on Tramp Shipping and lists arguments for and objections to U.S. participation in the tramp shipping field.

Points listed in favor of tramping operation are that: It will mean a larger merchant fleet; it will give the U.S. a voice in tramp rates and practices; it will give American exporters better protection; it will give American operators needed knowledge and experience; and that such a fleet would establish a shipping reservoir which could be drawn upon to meet peak loads and unexpected trade increases.

Opposed to these points were the facts that a tramping fleet would: Require heavy subsidies whose calculation could not possibly be accurate or fair; be of little benefit to the American economy as much of the service would be outside the U.S.; be competing with American liners in bad times; be contrary to the world trend which has been away from tramp shipping; and be of little value for national defense because of the characteristic lack of speed of such vessels.

U.S. trade in 1938 amounted to a total of 44,000,000 tons of dry cargoes. The Tibbott report pointed out that regularly scheduled American Lines carried 12,500,000 tons or 28 percent of this figure, while tramp steamers carried nearly 15,000,000 tons.

The report of the President's Advisory Committee on Merchant Marine in referring to tramp shipping said:

"The Committee feels . . . that such expenditure of public funds as may be necessary to maintain a merchant marine adequate for the country's requirements can be made to better advantage on the fast, high-quality ships required for liner operation rather than on the maintenance of a number of slow war-built tramp ships. It does not appear to the Committee that any considerable amount of American tramp-ship operation can be carried on successfully over the long range without subsidy in the face of the low cost foreign-flag competition."

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Navy Tanker Operation

The present confused fuel situation which has been keeping members of Congress busy requesting information on the disposition of the U.S. tanker fleet has resulted in a Navy Department report that it now owns and operates a total of 36 fleet-type tankers and charters an average of 45 tankers monthly from the Maritime Commission.

To meet a serious petroleum transportation problem that would result in the event of the expiration of the Maritime Commission's authority to operate tankers under general agency agreements on February 29, the Navy Department said, a plan was developed whereby 50 tankers laid up in the Maritime Commission's reserve fleets were to be reconditioned for the earliest possible use of the armed services. These vessels were to be acquired from the Commission and operated under a service form of contract with one or more commercial operators.

At the beginning of 1948 the Navy expects to have 16 of these vessels in service, and by mid-February all 50 tankers are expected to be in operation.

The Navy said that it has two large, specially equipped tankers laid up in its reserve fleet, reconversion of which would be impractical and would deprive the Navy of two specially fitted ships for which a definite need would exist in the event of another emergency.

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New Orleans Shifts Explosive Cargoes to Braithewaite

The port of New Orleans is offering, through its Braithewaite Wharf, below the New Orleans city limits, facilities to handle, with the greatest possible safety, shipments of high explosives, including ammonium nitrate, E. O. Jewell, general manager of the board has announced. Braithewaite is situated 17 miles below the city on the Mississippi river.

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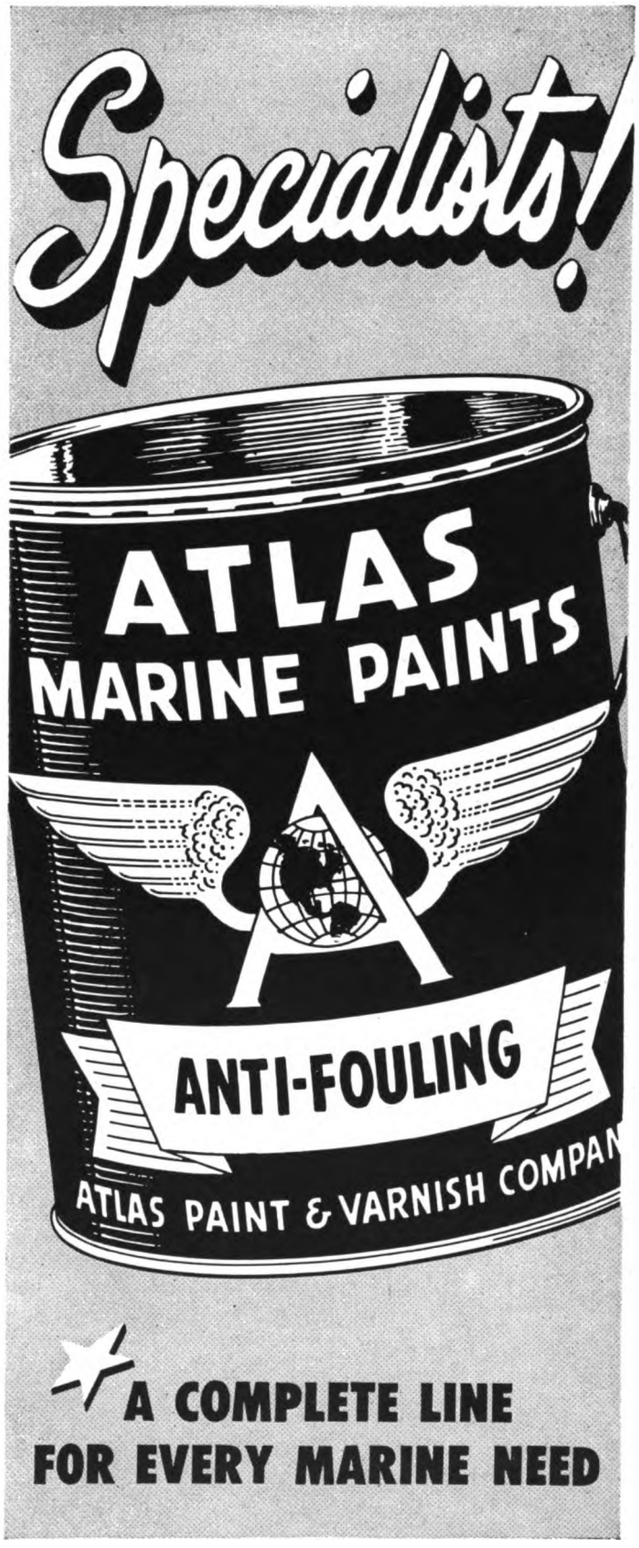

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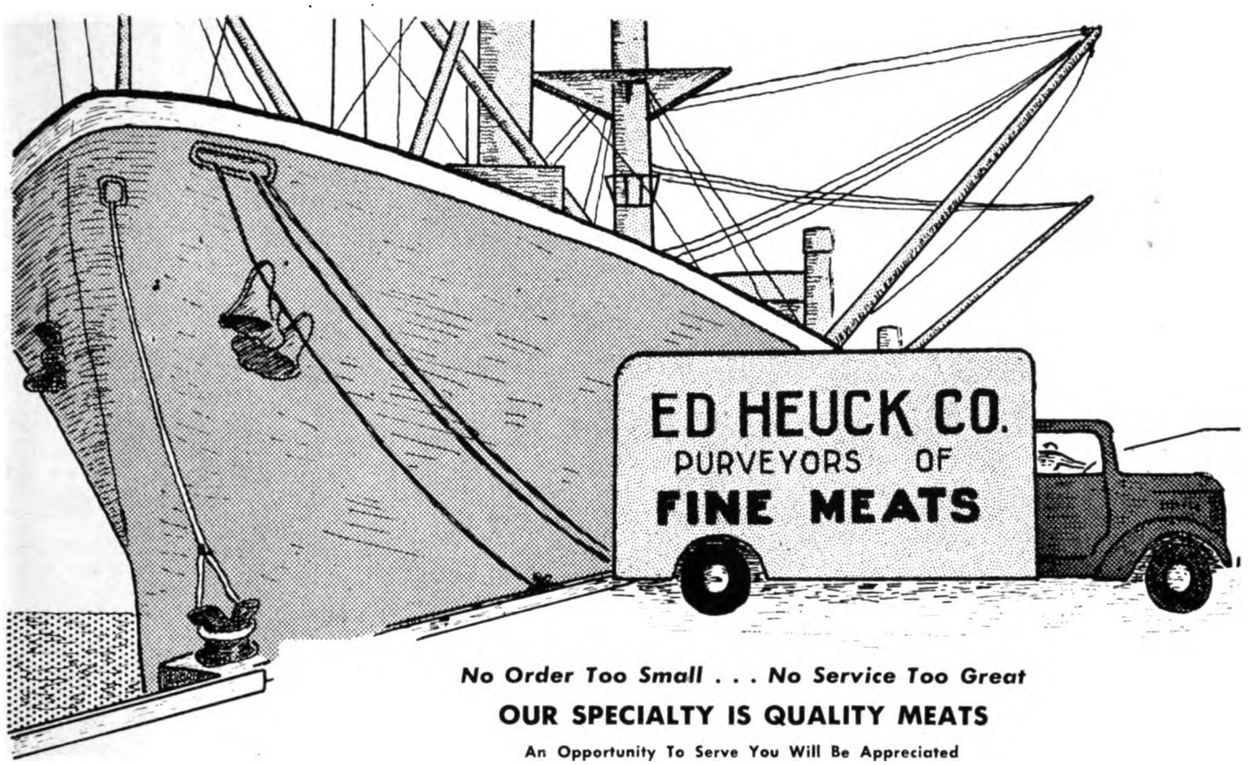

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EQUIPMENTALK

Marine Manufacturers Tell Their Stories . . .

Aerial's Signals Approved Under New Specifications

The Day-Nite distress signals, manufactured by Aerial Products, Inc., Merrick, Long Island, were approved October 27th by the U. S. Coast Guard as meeting the new specifications issued on October 24th. The approval was published in the Federal Register for November 1st, 1947.

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Robert G. Allen Company Announce West Coast Expansion

Announcement is made by Robert G. Allen, president of the Robert G. Allen Co., 502 Third Avenue, Brooklyn, New York; one of the leading marine and industrial chemical manufacturers, of the expansion of his company and production of his products on the west coast under the name of the Robert G. Allen Pacific Co., Inc., 8460 South San Pedro St., Los Angeles, California.

The officers of the newly formed company include reputable men who are well known by the marine industry as chemical consultants with engineering backgrounds. They are Ralph V. Scott, president; William Rudy, first vice president; John Cordes, second vice president; Jos. M. Costello, director, and Joe Bachand, secretary and treasurer.

Mr. Scott will be in charge of sales and advertising and will assist his distributors in each port on the Pacific Coast. The J. M. Costello Supply Company, Wilmington California; Cordes Bros., San Francisco; and the John H. Marvin Company in Portland and Seattle will handle sales and service. William Rudy is in charge of the industrial chemical department and Joe Bachand is the head chemist.

While Allenite and Allencote continue to be shipped from the Allen plant in Brooklyn, all other products of the firm including, SCALETEX, MULSIVEX, DUALENE, and VAPTEX are being produced at the newly constructed plant in Southern California. This firm holds the exclusive sales and export rights for the eleven Western States, Western Canada, Alaska, the Far East and Asia. The Robert G. Allen Pacific Co., Inc. fully guarantees the performance of its products.

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Refractory Coatings Names Representatives

Refractory Coatings Company, Newark, N. J. manufacturers of Refractokote, announces the appointment of Marine Solvents Service Corporation as its California sales and service representatives. Marine Solvents' head office is at 214 North Marine Avenue, Wilmington, telephone Terminal 4-3438, and it has just opened a San Francisco branch at 1440 Sixth Street, telephone Hemlock 1-5343. Refractory Coatings manufactures "Refractokote L.T." a refractory coating for temperature ranges from 1,400 to 2,200 degrees Fahrenheit; "Refractokote M. T." for temperatures from 2,000 to 2,900 degrees and "Refractokote H.T." for ranges from 2,500 to 3,950 degrees, all offering heat resistance plus. Other Representatives are: National Engineering Company, 1828 Greenmount Ave., Baltimore 3, Maryland; C. E. Thurston & Sons, 3032 Commercial Place, Norfolk 10, Virginia; T. Roddy Lanigan Company, 343 Southwest North River Drive, Miami, Florida, who are also the company's Florida agents.

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Worthington's New Seattle Headquarters

The Seattle, Washington, headquarters for Worthington Pump and Machinery Corporation have moved to their new two-story building at 2616 Western Avenue, with E. D. Schively as manager. The new building will serve as a general sales office and headquarters for specialists on Worthington air conditioning and refrigeration, meters, and construction equipment, and will serve Worthington's dealer organization as a warehouse for smaller pumps and compressor units and parts.

NEW MANAGER of the Pacific Central district of Sperry Gyroscope Company is WILLIAM F. HORN. Mr. Horn, who succeeds J. F. McCONKY, joined Sperry in 1930 as a service engineer, later became marine sales engineer and in 1941 he moved to San Francisco where he advanced to assistant district manager in 1944.

The district office is located at 525 Eighth Street, San Francisco, from which Sperry serves northern California, northern Nevada, Utah, Wyoming, Colorado and Hawaii.

OFFICERS OF THE ROBERT G. ALLEN PACIFIC CO. . . . Left to right: RALPH V. SCOTT, President; WILLIAM RUDY, First Vice President; JOHN CORDES, Second Vice President; JOS. M. COSTELLO, Director; and JOE BACHAND, Secretary-Treasurer.

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EVEN BEFORE THE SAN FRANCISCO FIRE of '06 there was a Luce selling meat on the San Francisco waterfront. The late Raymond A. Luce was the first of this family to serve the shipping industries, and his son, Raymond F. Luce and associates of Luce & Company, 300 Kansas Street, San Francisco, are carrying on by giving port stewards 24-hour service any day in the year with the choicest meats available. Accompanying pictures show, left to right: H. E. ATTERBURY and RAYMOND F. LUCE, owners of the business; JOHNNY COOPER, Manager of the Export Department and Marine Representative and BILL DREISBACK, head of the steamship department.

Vitroseal, The New Marine Refractory Coating

Vitroseal, the new marine refractory coating manufactured by the Whitman Company, 1407 Esperanza Street, Los Angeles 23, California, is reported by the company to add months of use to firebricks, substantially cutting rebricking labor costs, and saving excessive labor costs in firebox maintenance.

This marine refractory coating forms a semi-glazed protective monolithic wall of from 8.5 to 9 hardness (Diamond is 10 Mohs scale) between the fire and the firebricks, and is impervious to heats up to 3390° F. It withstands the destructive effects of flame impingement and abrasion.

It is said Vitroseal prevents spalling action, resists heat penetration and almost completely eliminates carbon and fly ash. According to the company, top operating efficiency is attained because Vitroseal's glazed coating speeds heat-up time due to reflection and decreases heat loss through joints, thereby saving considerable fuel costs.

Vitroseal is easily applied by either brush or spray. It is shipped to the user in powder form and water is added before application. The cost of this refractory coating is said to be negligible and 1 pound covers approximately 7 to 8 square feet. It is packaged in 100 lb. drums.

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Ets-Hokin & Galvan Add New Impregnating Tank

To accommodate some of the larger armatures now coming in for repair, Ets-Hokin and Galvan recently installed in their San Francisco plant a vacuum impregnating chamber three and a half feet in diameter by four and a half feet high. This unit augments the equipment initially developed to meet government specifications for the insulation treatment of motors and generators in marine use, and is similar in design to that in their Wilmington office described in the October issue of LOG.

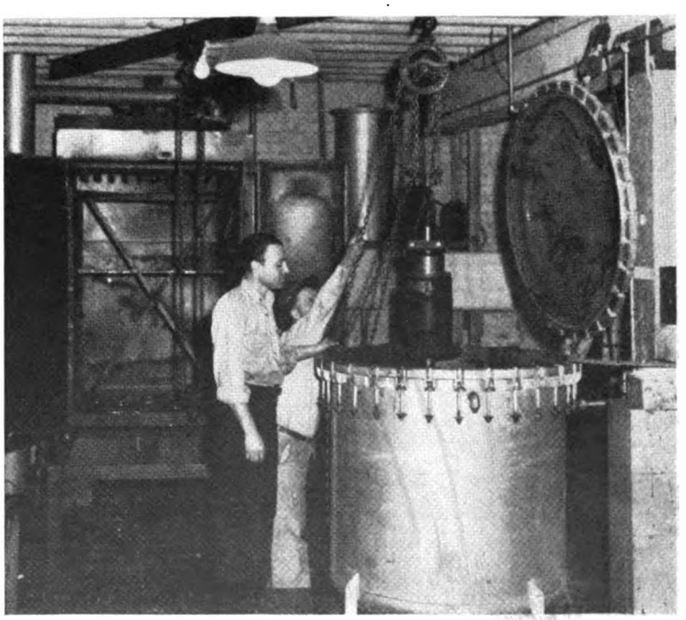
According to the plan approved by Marshall T. J. Garlinger of the San Francisco Port of Embarkation, U. S. Army, armatures, field coils, etc., requiring reinsulation must be subjected to a 16-step process, briefly outlined below.

After thorough cleaning with approved solvents and checking for grounds, short or open circuits, the unit under consideration shall be baked for six hours at 125 degrees centigrade in an approved oven having a free circulation of air. It shall then be placed in a vacuum tank and at least 28 inches of mercury vacuum drawn and maintained for four hours.

After cooling, parts are properly masked to prevent adherence of varnish on shafts, etc., and again placed in a vacuum tank. Insulating varnish is then admitted under a maintained vacuum of at least 22 inches of mercury for one hour, after which a draining period of 30 minutes or until varnish dripping ceases is required. Field coils and AC stators are then baked at 130 degrees centigrade for four hours, and armatures for six hours. The last two steps are repeated . . . and then again, but at atmospheric pressure. The result is the absolute binding of the windings and core into an integral part.

To complete the job, masking is removed and keyways, bores, bearing areas, etc., are cleaned. The commutator is turned and mica undercut, after which the armature must be dynamically balanced.

Jack Frost, superintendent of the San Francisco shop of Ets-Hokin & Galvan, is particularly happy over this latest addition, as it gives him two complete vacuum impregnating systems—two vacuum tanks, two electrically-heated ovens (the larger one is four by four feet by six feet high) and two sets of handling equipment. The versatility of such a layout makes possible the more efficient processing of those rush orders.



JACK FROST, San Francisco Shop Superintendent of Ets-Hokin & Galvan, watching the removal of an armature from their new vacuum impregnating chamber. In the background is the 106 cubic foot electrically heated baking oven.

Tom Clark Becomes Partner Of L. C. Norgaard

Tom Clark, formerly a naval architect with Socony-Vacuum Oil Company, New York, and Matson Navigation Company, San Francisco, has joined L. C. Norgaard as a partner in the latter's naval architecture and marine engineering office at Pier 5, San Francisco, and the firm is now known as Norgaard and Clark.

Mr. Clark attended the United States Naval Academy at Annapolis and its post graduate school, taking courses in naval architecture. During the war he was a Naval officer serving as assistant hull inspector at the New York Navy Yard and spent nearly three years overseas in a service squadron, operating fleet oilers, ammunition ships, reefers and cargo vessels. He was a lieutenant commander when he separated from the Navy.

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Army Vessels Being Converted To Lighthouse Tenders

W. C. Nickum, senior partner in W. C. Nickum & Sons, Inc., Seattle, is in Honolulu, Hawaii, supervising work on refitting the Army freight boats AA 7 and 8 for duty in French Indo-China as lighthouse tenders. Built at Sturgeon Bay, Wisconsin, the two vessels were used for retrieving airplanes and became adaptable for use as lighthouse tenders because of the heavy lift booms installed.

Other Nickum supervised work includes conversion of two LST's into "Floating Iceboxes" by Willamette Iron and Steel Company, Portland, for the Columbia River Packers Association. The ships are to be used to meet fishing trawlers at sea, pick up, quick freeze, and store the cargo. Design work on a small ferry for use on the upper Columbia River above Coulee Dam, and installation of refrigeration hold in a former 99 foot Army cargo vessel for operation by Pacific American Fisheries are also included in the Nickum organization assignments.

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T. J. SKEWES, JR., New member of the staff of Alexander Gow, Inc.

Chemist Named to Alexander Gow, Inc. Staff

James C. Gow, president, Alexander Gow, Inc., Seattle, has announced the appointment of T. J. (Jack) Skewes, Jr. to his staff. A native son of Seattle, Skewes attended the University of Washington where he graduated as chemical engineer with bachelor's degree. He affiliated with the Laucks Laboratories in 1934 and continued with them until called into service from the naval reserve in 1940. He was discharged from the Navy in October, 1945, with the rank of commander following sea duty in Iceland and in the South Pacific aboard destroyers and destroyer escorts, including 18 months in command of a destroyer escort.

He rejoined the Laucks organization in 1945 to become chief chemist and resigned that position to assume duties as marine surveyor and consulting engineer with the Gow marine survey firm.

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Chatter from the Northwest

H. S. Burtis, district manager of Sperry Gyroscope Company at Seattle, was feted by the Sperry staff at Seattle on November 19 in commemoration of the 30th anniversary of his service with the company.

James F. Griffiths, president, James Griffiths and Sons, has been named chairman of the Seattle Steamship Dinner. Date for the dinner is set for early in March.

The 20th annual cruise of the Portland Shipping Club was held on Saturday, December 13, with more than 250 in attendance.

C. Roy Albers, Jr., has resigned as manager of Lidell and Clarke, Inc., Portland, to become affiliated with Portland branch office of W. R. Grace and Company.

Duane Peabody has been named waterfront representative for Lake Union Drydock Company. Well known in North Pacific shipping circles, Peabody resigned from similar duties with the Northwest Ship Repair Company to assume the new position.

John E. Ritchie, labor relations manager of Alaska Steamship Company, resigned from that position effective November 1 to become Northwest representative of the Pacific American Shipowners Association. A newly created position, offices have been established in the Insurance Building, Seattle.

Charles D. Gillet has been transferred from the shipbuilding division of Todd Shipyards Corporation, Seattle, to the repair division with title of chief engineer.

Leo J. Cummings, formerly with Parry Navigation Company at Seattle, has been appointed traffic manager of Ocean Tow, Inc., Seattle. Carl Culver, owner of Transocean Shipping Company, former agents for Parry Navigation Company, at Portland, has been named owner's representative in the Northwest for States Marine Corporation. Culver's headquarters will be at Portland.

Ormond C. Nugent, formerly with Hydraulic Supply Company, has been named sales engineer for Washington Iron Works, Seattle.

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May & Smith Announce New Representatives

May & Smith Machine Works with headquarters at 533 West Spokane Street, Seattle, Washington, have announced two new representatives for Turbine Carbon Seals. W. J. "Bill" Robbins, 2201 N.W. Thurman Street, Portland, Oregon, for the state of Oregon, and the New Orleans and Gulf representative is Dixie Machine Welding and Metal Works, 1031 Annunciation Street, New Orleans 9, Louisiana.

A Liberty Becomes A Trade And Labor Relations Emissary

Appearing more like a yacht than a cargo ship the ss KRONVIKEN (ex-JOHN CARROLL) sailed out of Portland, Oregon, recently. Newspaper writers acclaimed her the best dressed Liberty ever to leave the port.

Reasons for the enthusiasm are manifold. At a cost of $130,000 the vessel has been scaled and painted inside and out from keel to mast tip and fitted with improved lounge and crew quarters.

A structural change is installation of a luxurious captain's lounge in the original pilot house space and construction of new pilot house above. Designed for comfort of the captain and vessel owner guests the lounge is lined with natural finish birch paneling and oak trim and outfitted with appropriate furnishings. In the lounge, as well in the new pilot house, Kearfott windows are installed in place of port lights.

Added crew comfort is managed by providing two additional pantries, paneling crew's rooms, making provision for two men in each room, and installation of dressers, desks, chairs and lockers in the rooms. All holds were scaled and painted. Teak doors and pearl gray plastic tile in the wheelhouse lend an added tone of luxury, but the final touch to accentuate the yacht like appearance results from white painted masts and superstructure, hull painted in pearl gray, and a decorative three inch wide line in blue paint running the length of the ship to complete the interior color scheme.

Owned by the J. Lauritzen Line work on the KRONVIKEN was performed at Portland by Albina Engine and Machine Works.

HOUSING STEAMSHIP COMPANIES, importers and exporters, and other marine firms is the ROBERT DOLLAR BUILDING in San Francisco and its new addition, shown on the left, the R. Stanley Dollar Building on Battery Street.

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Crossfield Products Underlay Deck Coverings on CLEVELAND

Underlayments beneath all deck coverings on the steel decking throughout the ss PRESIDENT CLEVELAND are Dex-O-Tex rubber mastic products of the Crossfield Products Corporation, Los Angeles, applied by the Portland, Oregon, marine branch of L. D. Reeder Company. Dex-O-Tex also is used in the tiled first class swimming pool aboard.

In 1938 Crossfield Products Corporation pioneered the development of rubber mastics in the United States and this product was coming into use as deck covering prior to Pearl Harbor in 1941. Until then, natural rubber was used largely in formulations, but the war ended importations of rubber, and enormous quantities of synthetics were manufactured to go aboard the vast fleets of war-built ships.

Crossfield Products Corporation now supplies formulations for the creation of finished deck coverings, lightweight underlying leveling courses and plate protecting bond coats. Their Dex-O-Tex materials offer advantages in that they are non-inflammable and do not give off toxic or otherwise objectionable fumes. As finished deck coverings, they present a non-slip surface, wet or dry and do not abrade shoe soles.

Naval architects are turning to the use of aluminum plate to reduce topside weight, as is done aboard the CLEVELAND. Rubber mastics fit this situation splendidly, for they bond as tightly to aluminum as to steel and have less weight per square foot than other materials used for like purposes.

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GE Radar Installed On Eight Puget Sound Tugs

Something new in radar progress and in towboating in the North Pacific is the installation of GE electronic navigators on eight tugs operating between Puget Sound and Alaska. Owned by the De-Long Engineering Company and Ocean Tow, Inc., the tugs are diesel powered Mikimilki class vessels engaged in year-round assignment towing barges laden with railway cars and locomotives, contractors' heavy equipment and supplies northbound, and returning with war surplus and scrap.

Initial installation was aboard the tug SHINN. At the completion of the first voyage with radar the skipper reported enthusiastically on the results, specifically noting travel time saved because navigation through difficult passages was possible at normal speed with safety in spite of fog and darkness. Other tugs are being equipped as fast as they arrive at Seattle, with work already completed on the tugs PORTUGBAR and TETON.

Installations are to be identical on each vessel. This standardization permits framing of antenna masts and other parts in advance and, as a result, equipment is in working condition aboard within 48 to 60 hours without loss in turn around time to the tug.

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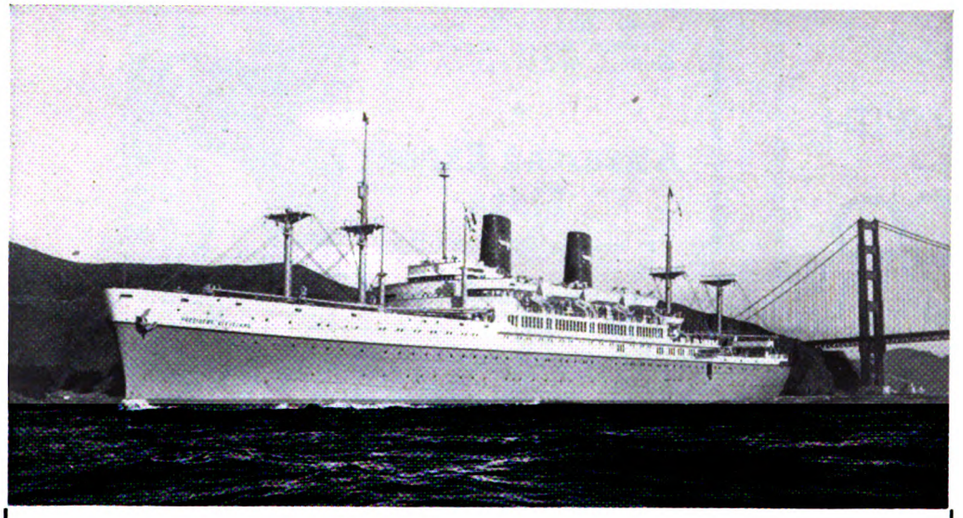
Naval Architects Counsel DEMA Editors

The editorial committee of engineers which is writing the book, "Marine Diesel Standard Practices" received guidance and constructive criticism of the material thus far compiled from seven members of the Society of Naval Architects and Marine Engineers. The editors are drawn from the membership of the Diesel Engine Manufacturers Association.

The SNAME members were Charles MacPherson, senior engineer surveyor, Lloyds Register of Shipping; A. S. Thaeler, assistant chief engineer, Federal Shipbuilding & Dry Dock Co.; Jorgen S. Nielsen, Diesel engineer, Shipbuilding Division, Bethlehem Steel Co.; Hugo Haas, Diesel engine section, U. S. Navy, Bureau of Ships; Dwight Simpson, naval architect, John G. Alden; A. R. Gatewood, chief engineering surveyor, American Bureau of Shipping, and Eads Johnson, naval architect.

DEMA's editorial committee of marine engineers consists of Edmund Frederick, Chairman, assistant chief engineer, Cooper-Bessemer Corp.; John G. Earle, special representative, Nordberg Mfg. Co.; Ervin L. Dahlund, assistant director of engineering, Fairbanks, Morse & Co.; John L. Ostborg, chief designing engineer, National Supply Co.; Paul Shirley, consulting engineer, Hooven, Owens, Rentschler Div., Lima-Hamilton Corp.; Wesley B. Moore, Manager, marine engine division, Worthington Pump & Machinery Corp., and Roy A. Hundley, chief engineer, Enterprise Engine & Foundry Co.

At the New York meeting, held in the Waldorf Astoria Hotel, it was announced that the book would be off the press next March. The price is to be $5.00.



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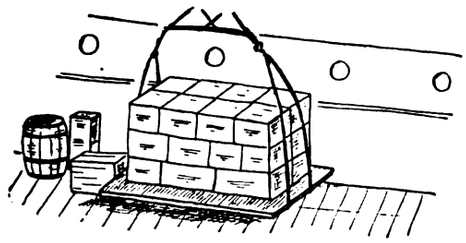

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Bish and O'Brien of GE Receive Promotions

C. H. Lang, Vice President and manager of sales of General Electric Company's Apparatus Department has announced new appointments in the department.

H. P. Bish has been appointed manager of Aircraft, Federal and Marine Divisions and W. V. O'Brien is the newly appointed assistant general manager of sales.

Mr. Bish was graduated from Ohio State University in 1919, when he joined the company's test course for student engineers. He was transferred to the Federal and Marine Divisions in 1920 as application engineer concerned with electric auxiliary drives on Great Lakes self-unloader ships, army engineer suction dredges, and diesel-electric drives on ferry boats, tugs, and tankers. He later became assistant to the manager of the Federal and Marine Divisions in charge of administrative affairs. He actively participated in settling all war contract terminations for the Apparatus Department. During the war, as head of the Navy Ship Section, he was commercially responsible for all turbines, gears, generators, motors, controls and other electrical equipment for Navy ships of all classes. In February of this year he was appointed assistant manager of the Federal and Marine Divisions.

Mr. O'Brien was graduated from the Virginia Military Institute in 1922. He joined General Electric on the test course, and later was transferred to the Power and Mining Commercial Department. He then went to Birmingham, Ala., as a salesman in the Industrial Division, later moving to Central Station sales at Atlanta, Ga. From 1932 to 1937, he was a member of the Birmingham office, after which he came to Schenectady as a proposition engineer in the Central Station Division. He became assistant to the manager of the Lighting and Cable Division in 1938, manager of the Wire and Cable Division in 1940, and assistant manager of the Central Station Divisions in January, 1945. He was appointed manager of the divisions in April, 1945.

‡ ‡ ‡

Fuel Economy

(Continued from Page 56)

resents a 24 hour average, and the displacement varied from 8500 to 8300 tons.

RPM	83.72	85.75	86.90	87.22
Barrels per engine mile	.776	.844	.866	.90

The following was obtained on successive days when the engine room conditions remained practically unchanged. The displacement was about 8300 tons.

RPM	84.52	84.86
Barrels per observed mile	.881	.940
Barrels per engine mile	.875	.882

The effect of weather or current is illustrated by the high fuel per observed mile on the second day although the fuel per engine mile is practically constant, which it should be since the engine room conditions were practically unchanged. On another occasion we found that fuel per engine mile was .536 under normal conditions and increased to .580 during a moderate gale, both readings being made at the same RPM and approximately the same displacement. This data is mentioned to illustrate the graphs, and to show the variations which may be expected.

It is believed that Figure 2 represents a basis or yardstick for comparing relative performance of ships of this class, which may operate at different loads and speeds. Also, the effect of displacement and RPM on the expected performance may be predicted, and the graph may also be used to estimate bunker requirements, allowing sufficient margin depending upon the voyage contemplated.

‡ ‡ ‡

Todd Builds New Dock At Hoboken Yard

A new, 685-foot, fireproof, concrete-and-steel pier, known as Pier D, mounting a 25-ton Gantry crane, has just been completed at the Hoboken Division of Todd Shipyards Corporation whose engineers designed it in every detail. The new structure replaces an old, narrow, wooden pier, which could not support a Gantry crane and it increases the yard's facilities in a number of ways. It allows handling more tonnage and the completion of jobs quicker—an important factor these days of round-the-clock activity in reconverting and repairing ships of all kinds from wartime status to commercial use.

Heretofore, heavy objects like propellers, rudders, anchor chains, and plates were serviced at the old pier and the adjacent 10,000-ton drydock by a truck crane or by a 30-ton floating crane which could not service the inside ship of a double-bank. The present Diesel-powered crane has a 70-foot swinging range either way, and can hoist an object clear over the drydock top or over one ship onto another.

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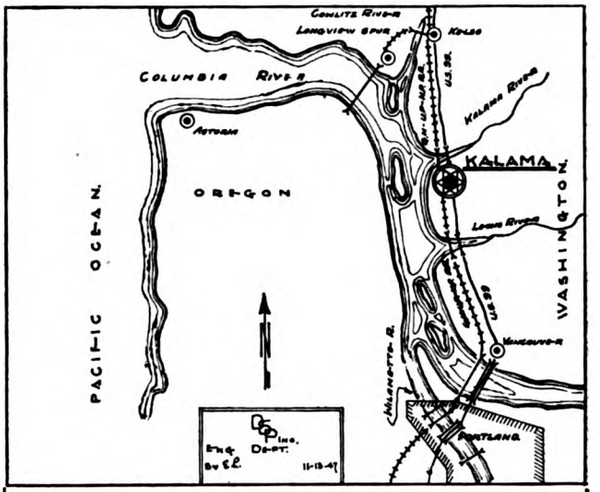

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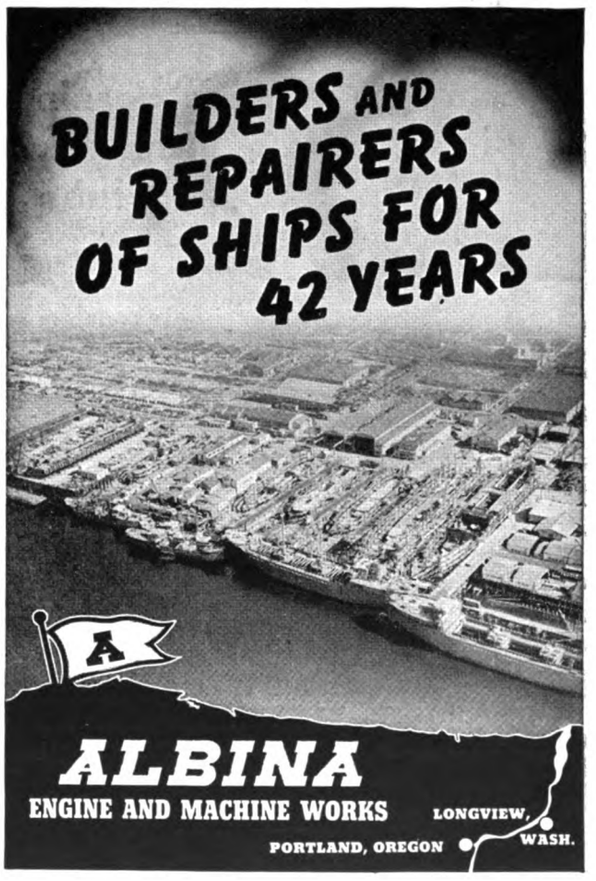

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New Towing Service For Pacific Trade

After a 21 day trip from Honolulu the ONO, one of two 516 ton tugs recently purchased by the Hawaiian Pineapple Company for its subsidiary Isleways, Ltd., towed in to San Francisco Bay, three crewless ex-Navy destroyers for scrapping at the Moore Drydock Company in Oakland.

Prior to the towing to San Francisco the vessels were placed in drydock at Honolulu for preparation of the journey. At this time all openings and valves were closed and made tight. Water-tight compartmentation below the main and forecastle decks was maintained by blocking all piping systems and closing all excess openings in bulkheads and decks. Loose gears and material throughout vessels were secured or stowed as necessary, and the six propellers were removed from the vessels and secured on the main deck aft.

Side lights and stern lights were installed and each light supplied with storage batteries of sufficient capacity to supply lights for 24 days towing time with continuous lighting.

The towing bridles for all three vessels are similar in arrangement. The vessels' chain was doubled, secured to the forward bitts port and starboard, and extended to the after bitts port and starboard on forecastle deck as a preventer. This chain was secured to a 1½" towing heart plate located approximately 10' forward of the anchor windlass. The lead chain from the towing plate was 2½" cast steel stud link chain, approximately 60' in length. The heart plate was further secured by means of a single length of the vessels' anchor chain from the heart plate to the vertical anchor windlass capstan.

The three vessels were unmanned and were arranged and towed in tandem as follows:

The first vessel, BAGLEY—towed at 600' on a 2" 6 x 19 towing hawser secured to the lead chain with a 2¾" shackle. This vessel was towed through from one drum of a dual drum towing engine.

The second vessel, CRAVEN—towed at 1390' on a 1¾" 6 x 27 plow steel towing hawser. Secured to lead chain with a 2¾" shackle. This vessel was towed from the second drum of the tugs dual drum towing engine.

The third vessel, HELM—towed at 2200' on a 1½" 6 x 37 plow steel hawser with a 2¾" shackle to lead chain. This vessel was towed through from the towing bitts on the tug.

Towed with their rudders set, respectively, at amidships, 5 degrees left and 20 degrees left, the destroyers fanned out somewhat to the left and slowed the tow to an average of four knots for the voyage. They maintained this relative position throughout, Captain Bob Nakea reported, except in a heavy following sea, which on occasions set all three destroyers on the right rear quarter of the ONO, in spite of the rudder angles.

The ONO was also designed for Navy service as the ATA223. She was purchased just prior to completion and reconverted by Isleways, Ltd. for its needs in the Hawaiian Islands. In the off season when pineapples are not being harvested, the ONO and its sister ship, the AHI are available for towing jobs. They are 143 feet long, have a 33 foot beam, and a 15½ foot draft, and are powered by two 1000 horsepower G. M. diesels.

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Horton Elected Vice President Of International Paint

George A. Horton, Jr., San Francisco, has been elected vice president of the International Paint Company (California) Inc. Previously he was a director and general sales manager of this firm. Harold Wrigley, in charge of International's marine sales for the west coast, visited the home office and factory in New York in January.

New Move for Westinghouse Electric in San Francisco

The new location of Westinghouse Electric Corporation in San Francisco is 410 Bush Street. The company's new three-story building provides modern, centrally located quarters for the company and many of its major divisions.

Two important branches of the company are not affected by the move. The Westinghouse Electric Appliance Division is headquartered in the Western Merchandise Mart, 1355 Market and the Westinghouse Electric Supply Company which recently moved to its new location, 201 Potrero St.

Waterman Steamship Company has inaugurated a monthly service to Porto Rico from the Port of Oakland. After many years of operation out of Gulf Ports this is the first attempt to maintain service for the Pacific Coast.

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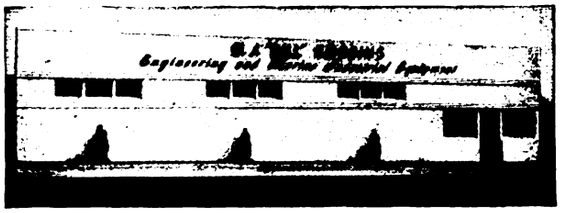

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The first vessel, BAGLEY—towed at 600' on a 2" 6 x 19 towing hawser secured to the lead chain with a 2¾" shackle. This vessel was towed through from one drum of a dual drum towing engine.

The second vessel, CRAVEN—towed at 1390' on a 1¾" 6 x 27 plow steel towing hawser. Secured to lead chain with a 2¾" shackle. This vessel was towed from the second drum of the tugs dual drum towing engine.

The third vessel, HELM—towed at 2200' on a 1½" 6 x 37 plow steel hawser with a 2¾" shackle to lead chain. This vessel was towed through from the towing bitts on the tug.

Towed with their rudders set, respectively, at amidships, 5 degrees left and 20 degrees left, the destroyers fanned out somewhat to the left and slowed the tow to an average of four knots for the voyage. They maintained this relative position throughout, Captain Bob Nakea reported, except in a heavy following sea, which on occasions set all three destroyers on the right rear quarter of the ONO, in spite of the rudder angles.

The ONO was also designed for Navy service as the ATA223. She was purchased just prior to completion and reconverted by Isleways, Ltd. for its needs in the Hawaiian Islands. In the off season when pineapples are not being harvested, the ONO and its sister ship, the AHI are available for towing jobs. They are 143 feet long, have a 33 foot beam, and a 15½ foot draft, and are powered by two 1000 horsepower G. M. diesels.

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Horton Elected Vice President Of International Paint

George A. Horton, Jr., San Francisco, has been elected vice president of the International Paint Company (California) Inc. Previously he was a director and general sales manager of this firm. Harold Wrigley, in charge of International's marine sales for the west coast, visited the home office and factory in New York in January.

New Move for Westinghouse Electric in San Francisco

The new location of Westinghouse Electric Corporation in San Francisco is 410 Bush Street. The company's new three-story building provides modern, centrally located quarters for the company and many of its major divisions.

Two important branches of the company are not affected by the move. The Westinghouse Electric Appliance Division is headquartered in the Western Merchandise Mart, 1355 Market and the Westinghouse Electric Supply Company which recently moved to its new location, 201 Potrero St.

Waterman Steamship Company has inaugurated a monthly service to Porto Rico from the Port of Oakland. After many years of operation out of Gulf Ports this is the first attempt to maintain service for the Pacific Coast.

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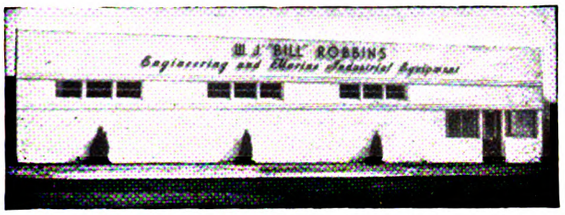

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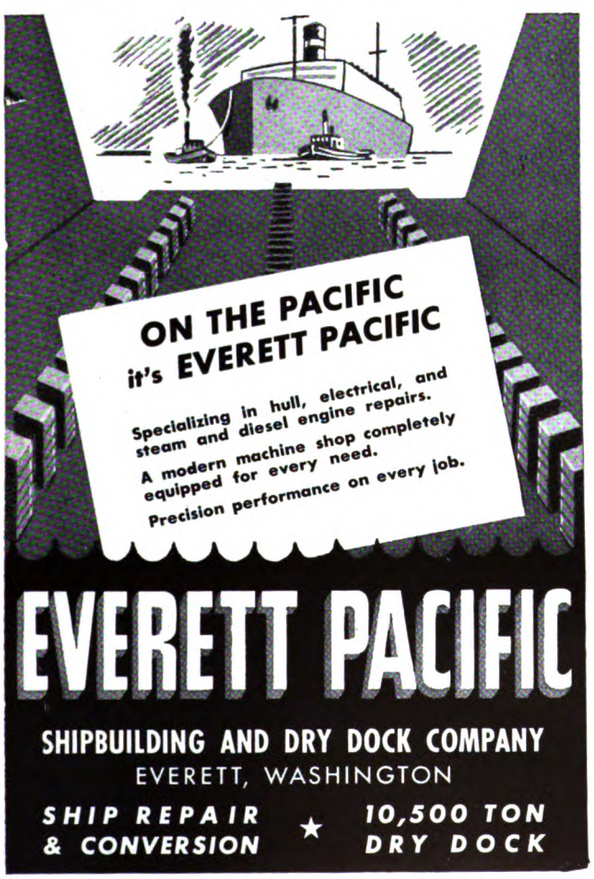

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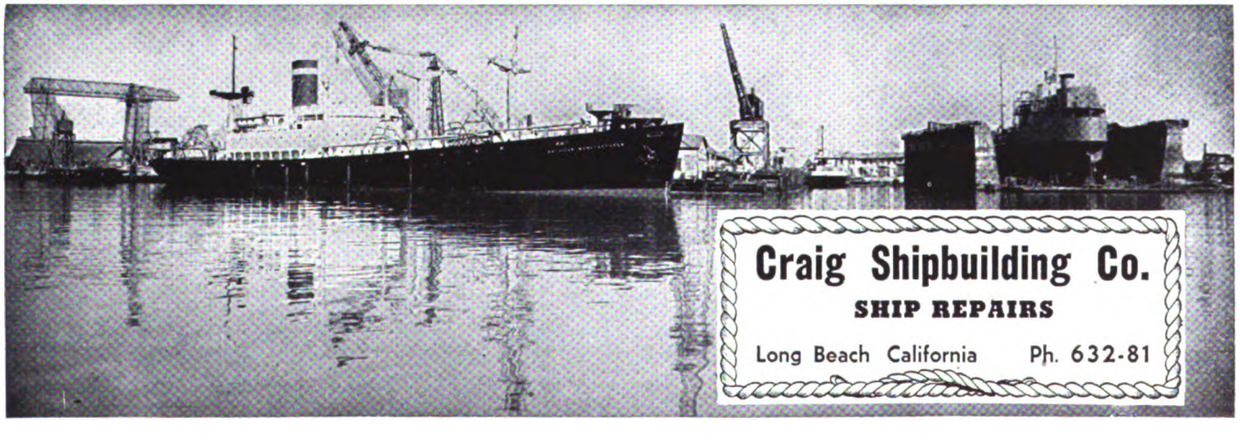

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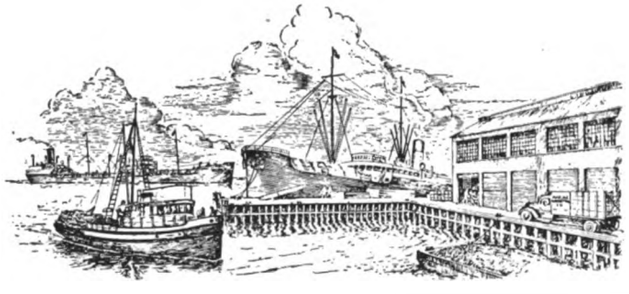

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In 1938 Crossfield Products Corporation pioneered the development of rubber mastics in the United States and this product was coming into use as deck covering prior to Pearl Harbor in 1941. Until then, natural rubber was used largely in formulations, but the war ended importations of rubber, and enormous quantities of synthetics were manufactured to go aboard the vast fleets of war-built ships.

Crossfield Products Corporation now supplies formulations for the creation of finished deck coverings, lightweight underlying leveling courses and plate protecting bond coats. Their Dex-O-Tex materials offer advantages in that they are non-inflammable and do not give off toxic or otherwise objectionable fumes. As finished deck coverings, they present a non-slip surface, wet or dry and do not abrade shoe soles.

Naval architects are turning to the use of aluminum plate to reduce topside weight, as is done aboard the CLEVELAND. Rubber mastics fit this situation splendidly, for they bond as tightly to aluminum as to steel and have less weight per square foot than other materials used for like purposes.

⚓ ⚓ ⚓

GE Radar Installed On Eight Puget Sound Tugs

Something new in radar progress and in towboating in the North Pacific is the installation of GE electronic navigators on eight tugs operating between Puget Sound and Alaska. Owned by the De-Long Engineering Company and Ocean Tow, Inc., the tugs are diesel powered Mikimilki class vessels engaged in year-round assignment towing barges laden with railway cars and locomotives, contractors' heavy equipment and supplies northbound, and returning with war surplus and scrap.

Initial installation was aboard the tug SHINN. At the completion of the first voyage with radar the skipper reported enthusiastically on the results, specifically noting travel time saved because navigation through difficult passages was possible at normal speed with safety in spite of fog and darkness. Other tugs are being equipped as fast as they arrive at Seattle, with work already completed on the tugs PORTUGBAR and TETON.

Installations are to be identical on each vessel. This standardization permits framing of antenna masts and other parts in advance and, as a result, equipment is in working condition aboard within 48 to 60 hours without loss in turn around time to the tug.

⚓ ⚓ ⚓

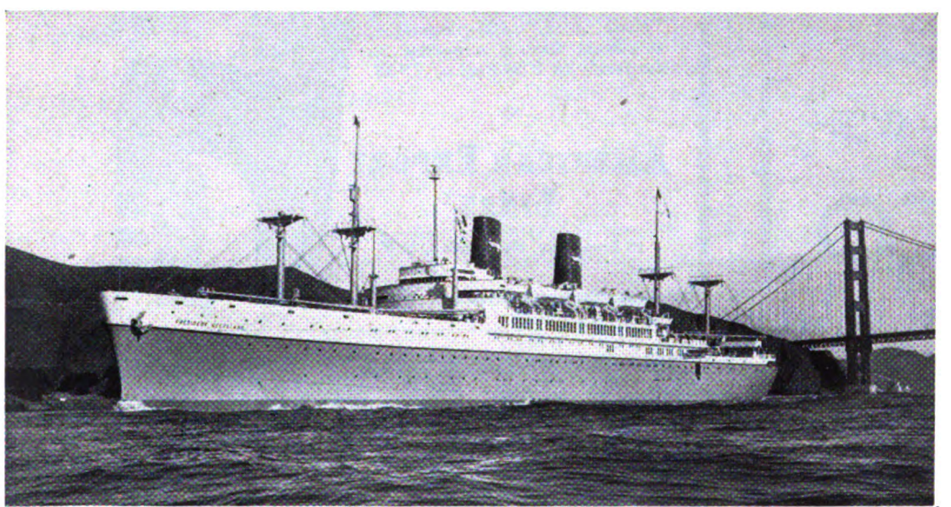
Naval Architects Counsel DEMA Editors

The editorial committee of engineers which is writing the book, "Marine Diesel Standard Practices" received guidance and constructive criticism of the material thus far compiled from seven members of the Society of Naval Architects and Marine Engineers. The editors are drawn from the membership of the Diesel Engine Manufacturers Association.

The SNAME members were Charles MacPherson, senior engineer surveyor, Lloyds Register of Shipping; A. S. Thaeler, assistant chief engineer, Federal Shipbuilding & Dry Dock Co.; Jorgen S. Nielsen, Diesel engineer, Shipbuilding Division, Bethlehem Steel Co.; Hugo Haas, Diesel engine section, U. S. Navy, Bureau of Ships; Dwight Simpson, naval architect, John G. Alden; A. R. Gatewood, chief engineering surveyor, American Bureau of Shipping, and Eads Johnson, naval architect.

DEMA's editorial committee of marine engineers consists of Edmund Frederick, Chairman, assistant chief engineer, Cooper-Bessemer Corp.; John G. Earle, special representative, Nordberg Mfg. Co.; Ervin L. Dahlund, assistant director of engineering, Fairbanks, Morse & Co.; John L. Ostborg, chief designing engineer, National Supply Co.; Paul Shirley, consulting engineer, Hooven, Owens, Rentschler Div., Lima-Hamilton Corp.; Wesley B. Moore, Manager, marine engine division, Worthington Pump & Machinery Corp., and Roy A. Hundley, chief engineer, Enterprise Engine & Foundry Co.

At the New York meeting, held in the Waldorf Astoria Hotel, it was announced that the book would be off the press next March. The price is to be $5.00.



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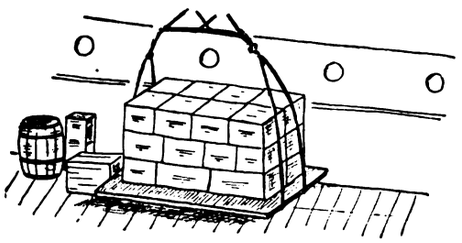

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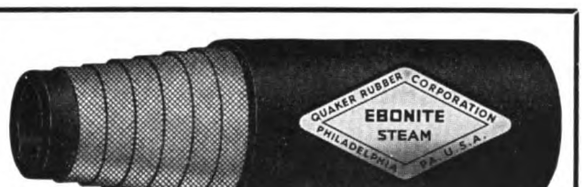

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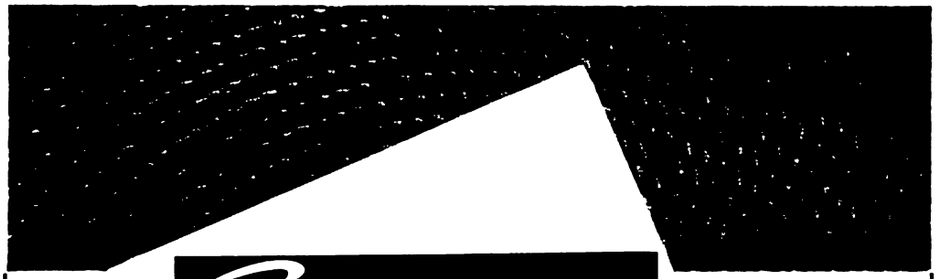
Bish and O'Brien of GE Receive Promotions

C. H. Lang, Vice President and manager of sales of General Electric Company's Apparatus Department has announced new appointments in the department.

H. P. Bish has been appointed manager of Aircraft, Federal and Marine Divisions and W. V. O'Brien is the newly appointed assistant general manager of sales.

Mr. Bish was graduated from Ohio State University in 1919, when he joined the company's test course for student engineers. He was transferred to the Federal and Marine Divisions in 1920 as application engineer concerned with electric auxiliary drives on Great Lakes self-unloader ships, army engineer suction dredges, and diesel-electric drives on ferry boats, tugs, and tankers. He later became assistant to the manager of the Federal and Marine Divisions in charge of administrative affairs. He actively participated in settling all war contract terminations for the Apparatus Department. During the war, as head of the Navy Ship Section, he was commercially responsible for all turbines, gears, generators, motors, controls and other electrical equipment for Navy ships of all classes. In February of this year he was appointed assistant manager of the Federal and Marine Divisions.

Mr. O'Brien was graduated from the Virginia Military Institute in 1922. He joined General Electric on the test course, and later was transferred to the Power and Mining Commercial Department. He then went to Birmingham, Ala., as a salesman in the Industrial Division, later moving to Central Station sales at Atlanta, Ga. From 1932 to 1937, he was a member of the Birmingham office, after which he came to Schenectady as a proposition engineer in the Central Station Division. He became assistant to the manager of the Lighting and Cable Division in 1938, manager of the Wire and Cable Division in 1940, and assistant manager of the Central Station Divisions in January, 1945. He was appointed manager of the divisions in April, 1945.



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Fuel Economy

(Continued from Page 56)

resents a 24 hour average, and the displacement varied from 8500 to 8300 tons.

RPM	83.72	85.75	86.90	87.22
Barrels per engine mile	.776	.844	.866	.90

The following was obtained on successive days when the engine room conditions remained practically unchanged. The displacement was about 8300 tons.

RPM	84.52	84.86
Barrels per observed mile	.881	.940
Barrels per engine mile	.875	.882

The effect of weather or current is illustrated by the high fuel per observed mile on the second day although the fuel per engine mile is practically constant, which it should be since the engine room conditions were practically unchanged. On another occasion we found that fuel per engine mile was .536 under normal conditions and increased to .580 during a moderate gale, both readings being made at the same RPM and approximately the same displacement. This data is mentioned to illustrate the graphs, and to show the variations which may be expected.

It is believed that Figure 2 represents a basis or yardstick for comparing relative performance of ships of this class, which may operate at different loads and speeds. Also, the effect of displacement and RPM on the expected performance may be predicted, and the graph may also be used to estimate bunker requirements, allowing sufficient margin depending upon the voyage contemplated.

Todd Builds New Dock At Hoboken Yard

A new, 685-foot, fireproof, concrete-and-steel pier, known as Pier D, mounting a 25-ton Gantry crane, has just been completed at the Hoboken Division of Todd Shipyards Corporation whose engineers designed it in every detail. The new structure replaces an old, narrow, wooden pier, which could not support a Gantry crane and it increases the yard's facilities in a number of ways. It allows handling more tonnage and the completion of jobs quicker—an important factor these days of round-the-clock activity in reconverting and repairing ships of all kinds from wartime status to commercial use.

Heretofore, heavy objects like propellers, rudders, anchor chains, and plates were serviced at the old pier and the adjacent 10,000-ton drydock by a truck crane or by a 30-ton floating crane which could not service the inside ship of a double-bank. The present Diesel-powered crane has a 70-foot swinging range either way, and can hoist an object clear over the drydock top or over one ship onto another.

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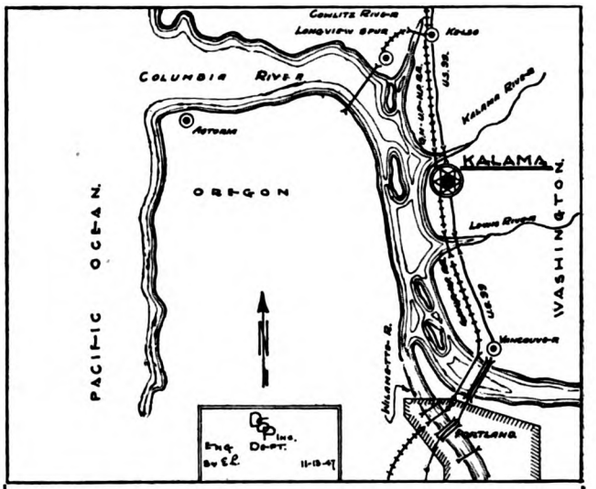

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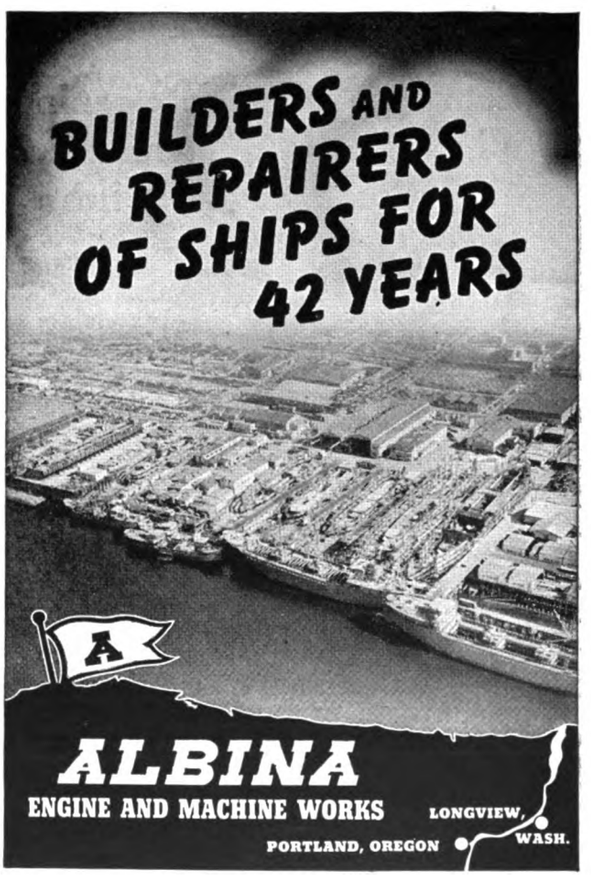

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New Towing Service For Pacific Trade

After a 21 day trip from Honolulu the ONO, one of two 516 ton tugs recently purchased by the Hawaiian Pineapple Company for its subsidiary Isleways, Ltd., towed in to San Francisco Bay, three crewless ex-Navy destroyers for scrapping at the Moore Drydock Company in Oakland.

Prior to the towing to San Francisco the vessels were placed in drydock at Honolulu for preparation of the journey. At this time all openings and valves were closed and made tight. Water-tight compartmentation below the main and forecastle decks was maintained by blocking all piping systems and closing all excess openings in bulkheads and decks. Loose gears and material throughout vessels were secured or stowed as necessary, and the six propellers were removed from the vessels and secured on the main deck aft.

Side lights and stern lights were installed and each light supplied with storage batteries of sufficient capacity to supply lights for 24 days towing time with continuous lighting.

The towing bridles for all three vessels are similar in arrangement. The vessels' chain was doubled, secured to the forward bitts port and starboard, and extended to the after bitts port and starboard on forecastle deck as a preventer. This chain was secured to a 1½" towing heart plate located approximately 10' forward of the anchor windlass. The lead chain from the towing plate was 2½" cast steel stud link chain, approximately 60' in length. The heart plate was further secured by means of a single length of the vessels' anchor chain from the heart plate to the vertical anchor windlass capstan.

The three vessels were unmanned and were arranged and towed in tandem as follows:

The first vessel, BAGLEY—towed at 600' on a 2" 6 x 19 towing hawser secured to the lead chain with a 2¾" shackle. This vessel was towed through from one drum of a dual drum towing engine.

The second vessel, CRAVEN—towed at 1390' on a 1¾" 6 x 27 plow steel towing hawser. Secured to lead chain with a 2¾" shackle. This vessel was towed from the second drum of the tugs dual drum towing engine.

The third vessel, HELM—towed at 2200' on a 1½" 6 x 37 plow steel hawser with a 2¾" shackle to lead chain. This vessel was towed through from the towing bitts on the tug.

Towed with their rudders set, respectively, at amidships, 5 degrees left and 20 degrees left, the destroyers fanned out somewhat to the left and slowed the tow to an average of four knots for the voyage. They maintained this relative position throughout, Captain Bob Nakea reported, except in a heavy following sea, which on occasions set all three destroyers on the right rear quarter of the ONO, in spite of the rudder angles.

The ONO was also designed for Navy service as the ATA223. She was purchased just prior to completion and reconverted by Isleways, Ltd. for its needs in the Hawaiian Islands. In the off season when pineapples are not being harvested, the ONO and its sister ship, the AHI are available for towing jobs. They are 143 feet long, have a 33 foot beam, and a 15½ foot draft, and are powered by two 1000 horsepower G. M. diesels.

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Horton Elected Vice President Of International Paint

George A. Horton, Jr., San Francisco, has been elected vice president of the International Paint Company (California) Inc. Previously he was a director and general sales manager of this firm. Harold Wrigley, in charge of International's marine sales for the west coast, visited the home office and factory in New York in January.

New Move for Westinghouse Electric in San Francisco

The new location of Westinghouse Electric Corporation in San Francisco is 410 Bush Street. The company's new three-story building provides modern, centrally located quarters for the company and many of its major divisions.

Two important branches of the company are not affected by the move. The Westinghouse Electric Appliance Division is headquartered in the Western Merchandise Mart, 1355 Market and the Westinghouse Electric Supply Company which recently moved to its new location, 201 Potrero St.

Waterman Steamship Company has inaugurated a monthly service to Porto Rico from the Port of Oakland. After many years of operation out of Gulf Ports this is the first attempt to maintain service for the Pacific Coast.

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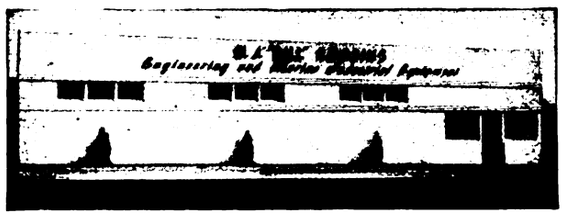

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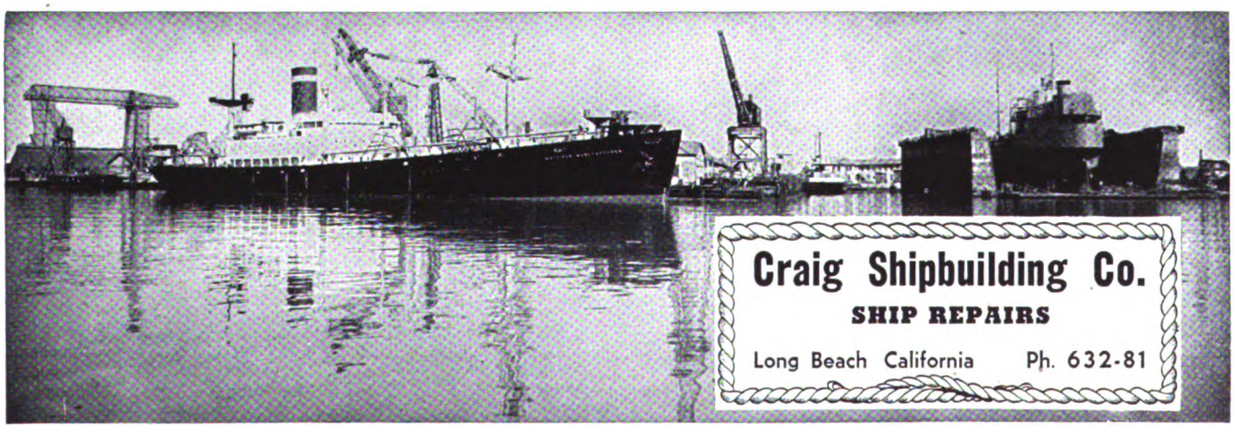

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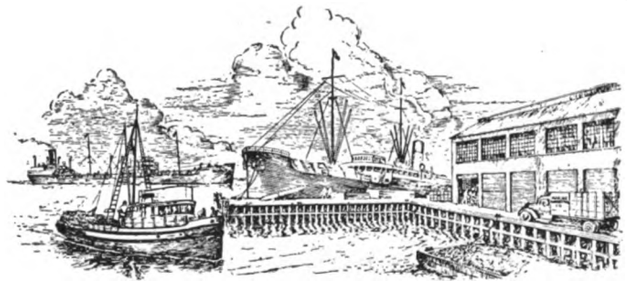

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ADVERTISERS INDEX

Albina Engine & Machine Works....73
Alcoa Steamship Company, Inc....39
Allen Pacific Co., Inc.,
Robert G....Inside Back Cover
American Brass Company....83
American Export Lines....69
American Mail Line....80
American President Lines....9
Arnessen Electric Company....69
Asbestos Supply Companies....75
Atkinson Company, Milo....51
Atlas Paint & Varnish Company....66
Baier & Associates, L. S....84
Baker Dock Company....83
Bethlehem Steel Company....12
Bird-Archer Company of California....82
Brod & McClung....73
Cavanaugh Machine Works....79
Central Maritime Contracting Company....71
Chesapeake & Ohio Railway Lines....19
Columbia Machine Works....81
Commercial Ship Repair....80
Consolidated Services, Inc....75
Craig Shipbuilding Company....78
Crossfield Products....70
Dearborn Chemical Company....82
Dee Engineering Company....83
De Laval Separator Company....7
De Laval Steam Turbine Co., The....76
Dravis Engineering & Machine Works....71
Duke's Packing Co....81
Dulien Steel Products....53
Everett Pacific Shipbuilding & Dry Dock Company....75
Fairbanks, Morse and Company....4
Frickie, James H....84
Gamlen Chemical Co....45
General Electric Company....10, 11
General Engineering and Dry Dock Co....77
Gladding, McBean & Co....84
Gow, Inc., Alexander....81
Griffiths & Sprague Stevedoring Co....76
Guralnick, Morris....84
Hagan Corporation....8
Hanson H. C....84
Harris, Manly S....84
Hart & Burns, Inc....41
Haviside Co....77
Hawaiian Pineapple Company....57
Heuck Corporation, Ed....67
Hickman Engineering Co....78
Hiller, Paul W....84
Hough & Egbert Co....82
Huden, Thomas P....83
International Paint Co., Inc....17
Isherwood & Co., Ltd., Sir Jos. W....83
Isleways, Limited....57
Kalama, Port of....73
Long Beach, Port of....59
Luce & Company....69
Marine Electric Company....78
Marine & Industrial Supply, Inc....83
Marine Marketing Co....80
Marine Service....81
Mitchell Stevedoring Co....78
Moore-McCormack Lines....47
Morrison & Bevilockway....81
National Malleable & Steel Castings Co....6
Nordberg Manufacturing Co....Front Cover, 3
Norgaard & Associates, L. C....84
Northwest Instrument Company....83
Northwest Marine Iron Works....76
Northwest Ship Repair Co....81
Nystrom, E. W....84
O'Donnell Copper Works, E. M....84
Oxi Corporation....21
Paraffine Companies, Inc....64
Pacific Marine Supply Co....77
Pilot Marine Corp....73
Puget Sound Freight Lines....83
Puget Sound Navigation Co....82
Quaker Pacific Rubber Co....71
Refractory Coatings Co....59
Refrigeration Components....71
Republic Electric Co....81
Robbins, W. J. "Bill"....75
Rothschild International Stevedoring Co....84
Seaboard Machinery Corp....13
Sea-Ro Packing Co., Inc....57
Seaside Supply Stores, Inc....81
Seattle Marine Surveyors....83
Seattle, Port of....67
Sherritt & Headman, Inc....79
Sherwin-Williams Company....22
Socony-Vacuum Oil Co., Inc....Inside Front Cover
Sopac Ship Maintenance Co....74
Southworth Company, Herb L....83
Standard Distributing Co....64
Standard Oil Company of California....15
Submarine Signal Co....5
Sumco Products, Inc....82
Sweetin Company, J. L....83
Swett & Company, George E....79
Texas Company, The....Outside Back Cover
Thorpe, J. T....80
Todd Shipyards Corp....49
Toumey Electric & Engineering Co....80
Tubbs Cordage Co....72
United Engineering Co., Inc....1
United Fruit Co....2
Western Asbestos Co....79
Western Machinery Corp....78
Willamette Tug & Barge Co....84
Wilmington Engineering Service Co....83
Wilmington Transportation Co....82
Wing Manufacturing Co., L. J....51
Winter Company, E. V....77
Woodlawn Flower Shop....82
Xxit Sales Corporation....66

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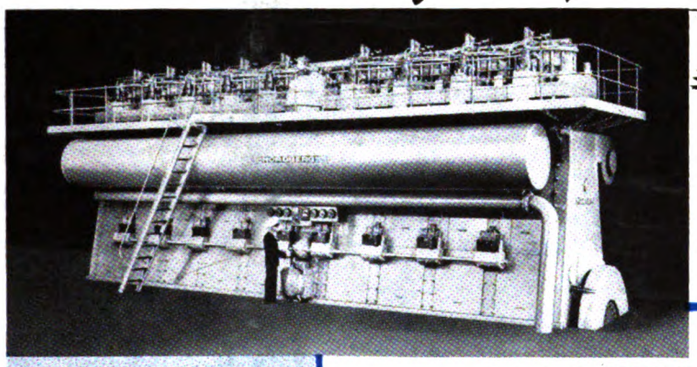

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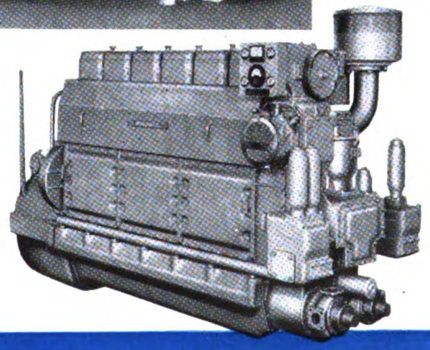

See Page 3

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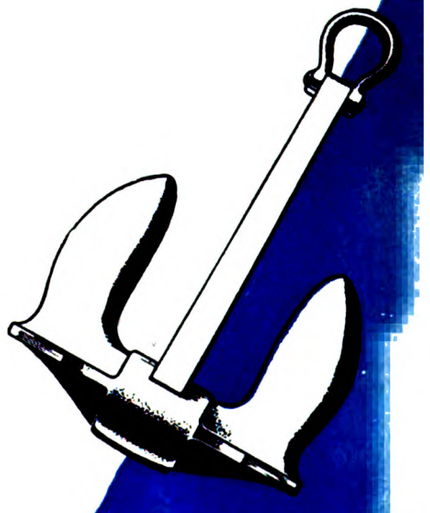

FEBRUARY 1948
Volume 45 • Number 2

EDITORIAL INDEX ON PAGE... 23
ADVERTISERS' INDEX ON PAGE 76

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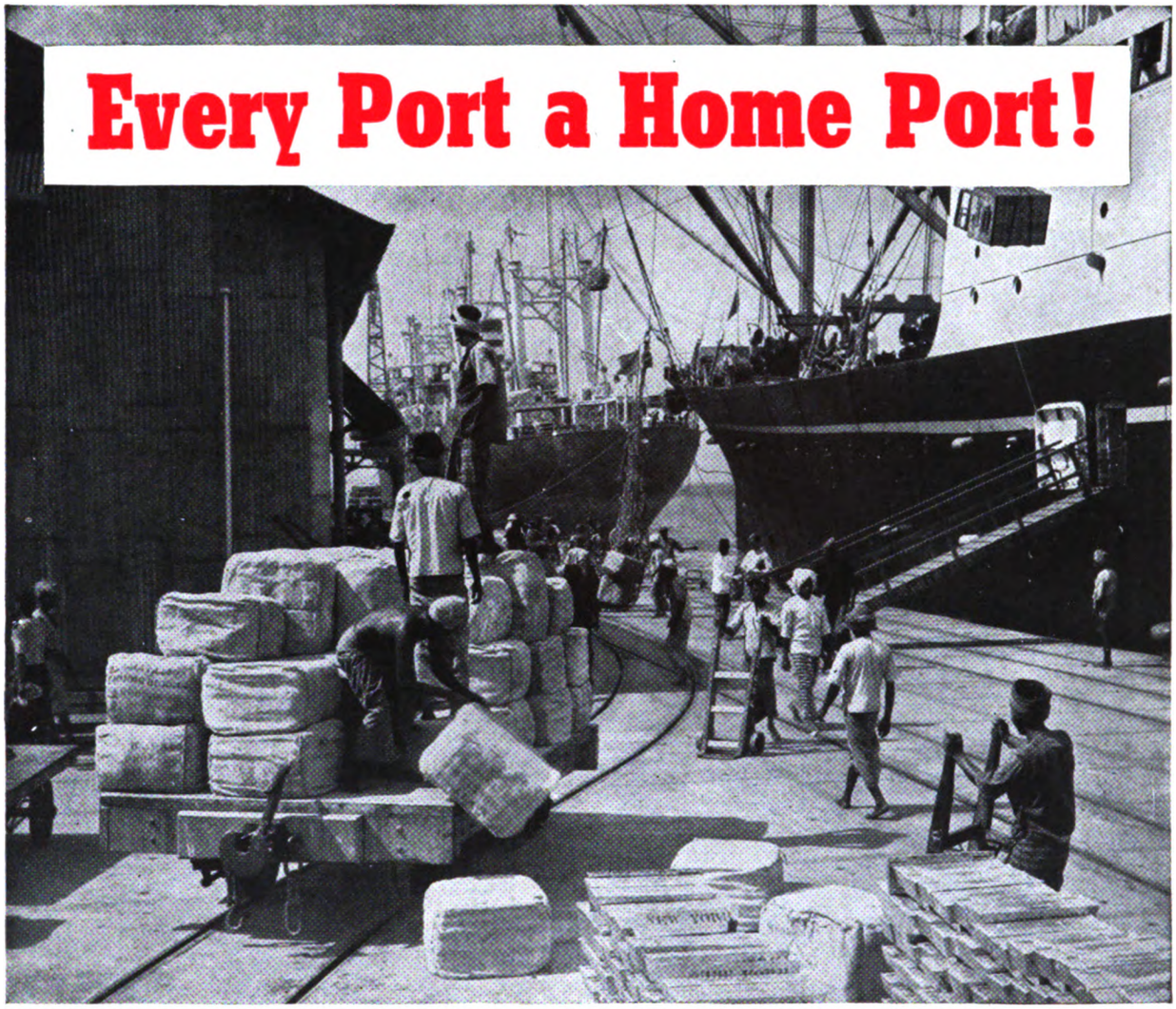

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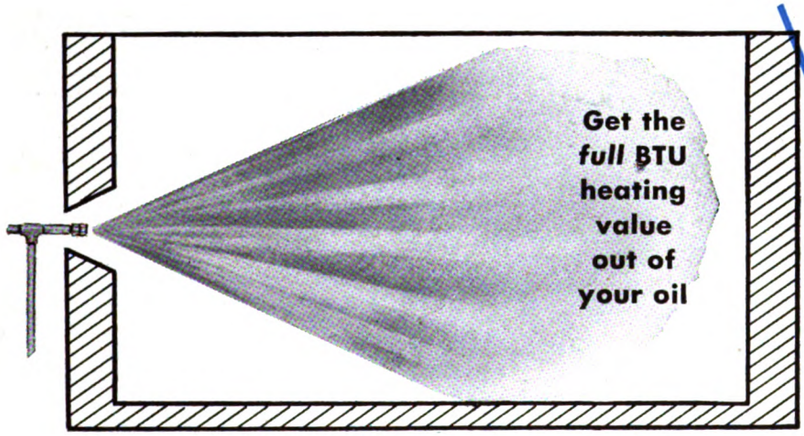

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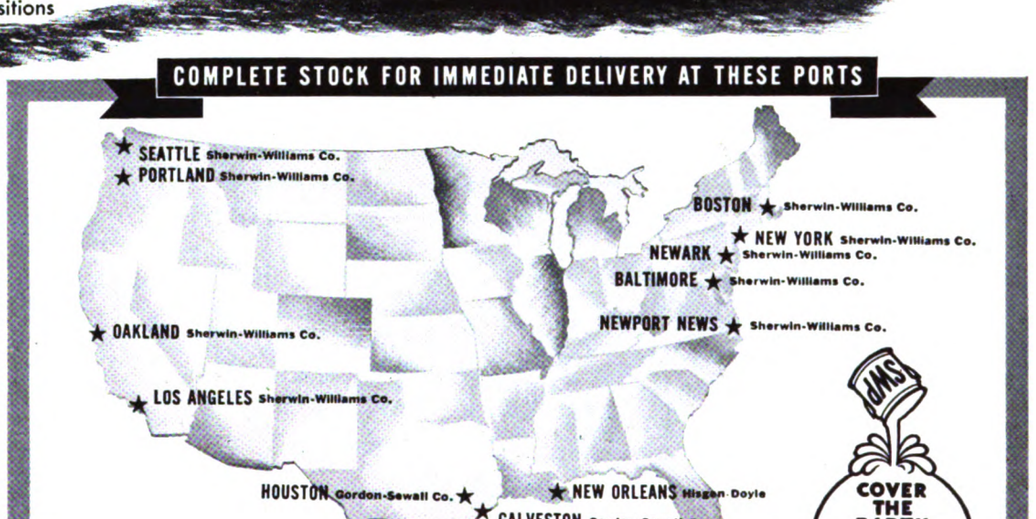

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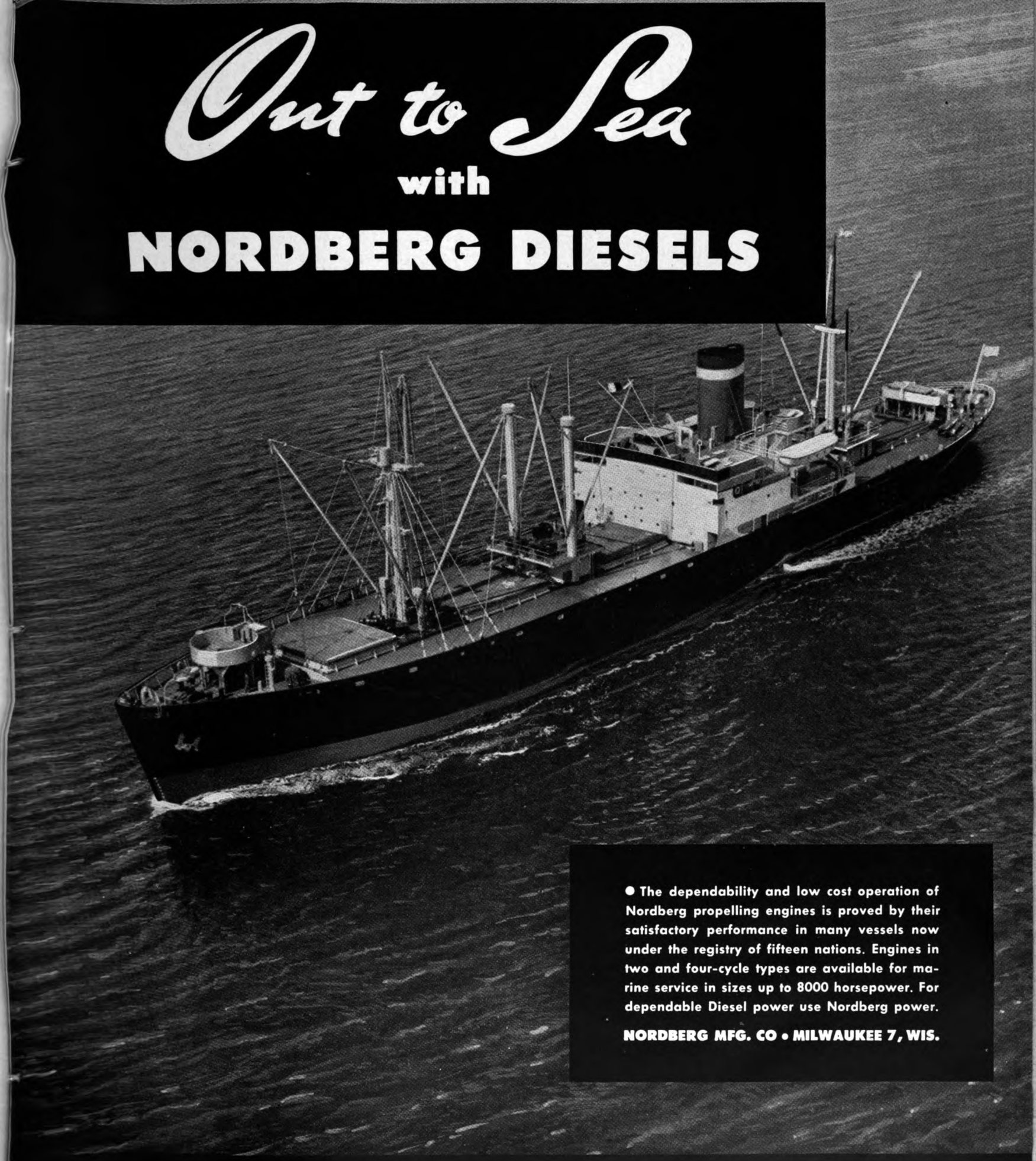

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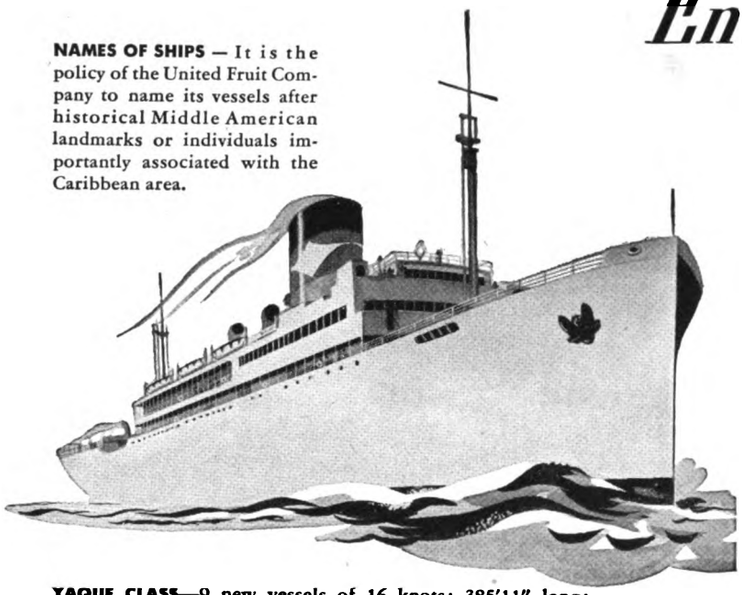

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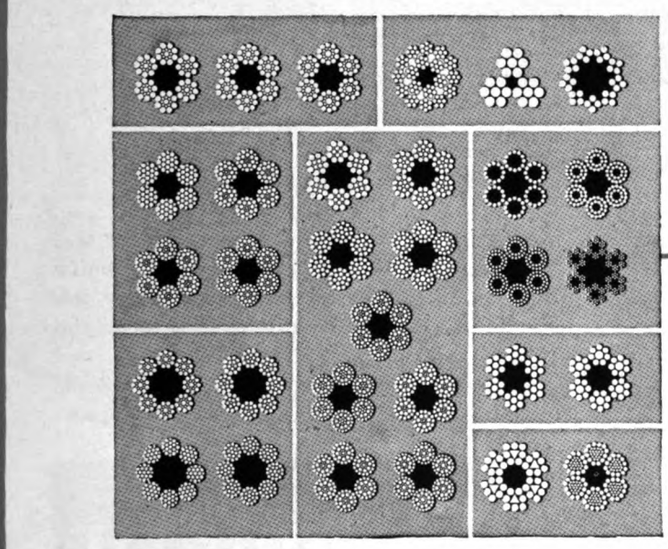

STRAIGHT AND STALWART, every factory stack is a towering symbol of man's faith in the future... industry's confidence in its ability to create and to expand production for better living and a richer world.

With confidence like that, Roebling has pioneered in developing and making an extraordinary range of products indispensable to industry. And the confidence that its products and engineering skill have earned in every industrial field is one of Roebling's most valued assets. Every Roebling employee is striving to safeguard that confidence by making products and rendering services that are of maximum utility to you.

YOU CAN'T GO WRONG WITH THE RIGHT WIRE ROPE

EVERY TYPE of Roebling Wire Rope is right for certain service. But that's not enough... the important thing is that you choose the one rope that's *right* for your own job... the rope with the right balance of strength, flexibility, fatigue and abrasion resistance to give real economy over a long period of use.

Your Roebling Field Man will gladly study your requirements, and you can have full confidence that the rope he recommends will give you top returns per dollar. Whatever type it is, preformed or non-preformed, it will have behind it Roebling's unequalled experience in research, development and manufacturing the finest wire products that can be made.

Call or wire the nearest Roebling branch office.

JOHN A. ROEBLING'S SONS COMPANY
OF CALIFORNIA
San Francisco Los Angeles Seattle Portland

A CENTURY OF CONFIDENCE **ROEBLING**

JR ROEBLING

★ WIRE ROPE AND STRAND ★ FITTINGS ★ SLINGS ★ SUSPENSION BRIDGES AND CABLES ★ AIRCORD, AIRCORD TERMINALS AND AIR CONTROLS ★ AERIAL WIRE ROPE SYSTEMS ★ ELECTRICAL WIRE AND CABLE ★ SKI LIFTS ★ HARD, ANNEALED OR TEMPERED HIGH AND LOW CARBON FINE AND SPECIALTY WIRE, FLAT WIRE, COLD ROLLED STRIP AND COLD ROLLED SPRING STEEL ★ SCREEN, HARDWARE AND INDUSTRIAL WIRE CLOTH ★ LAWN MOWERS

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LINES TO HOLD A GIANTESS

A test that only the finest rope can long survive is to warp a great ship into her berth—or out of it. That rope must guide the giantess and hold her firm against all the forces of wind, tide and her own vast tonnage. A broken rope might set her adrift, a menace to harbor traffic.

Men who follow the sea and ply the harbors have long made "Plymouth Ship Brand Manila Rope" their top choice for the gruelling work of towing and mooring. This famous rope is made exclusively of the finest grades of Manila fiber, by some of the world's most skillful craftsmen. "Ship Brand" combines great tensile strength with long, useful life, even under the constant punishment of twisting, bending, friction, sharp jerks, water, weather, rough handling.

In factories and on farms, just as on the sea, men who know the best in ropes specify Plymouth Ship Brand Manila for every job where life or property must be staked on the strength and stamina of rope. Your own supplier may already have his first postwar coils of "Ship Brand" on hand to meet your needs.

PLYMOUTH
Cordage Products

PLYMOUTH 1824

THE ROPE YOU CAN TRUST BECAUSE IT IS ENGINEERED FOR YOUR JOB

Plymouth Cordage Company, Plymouth, Massachusetts

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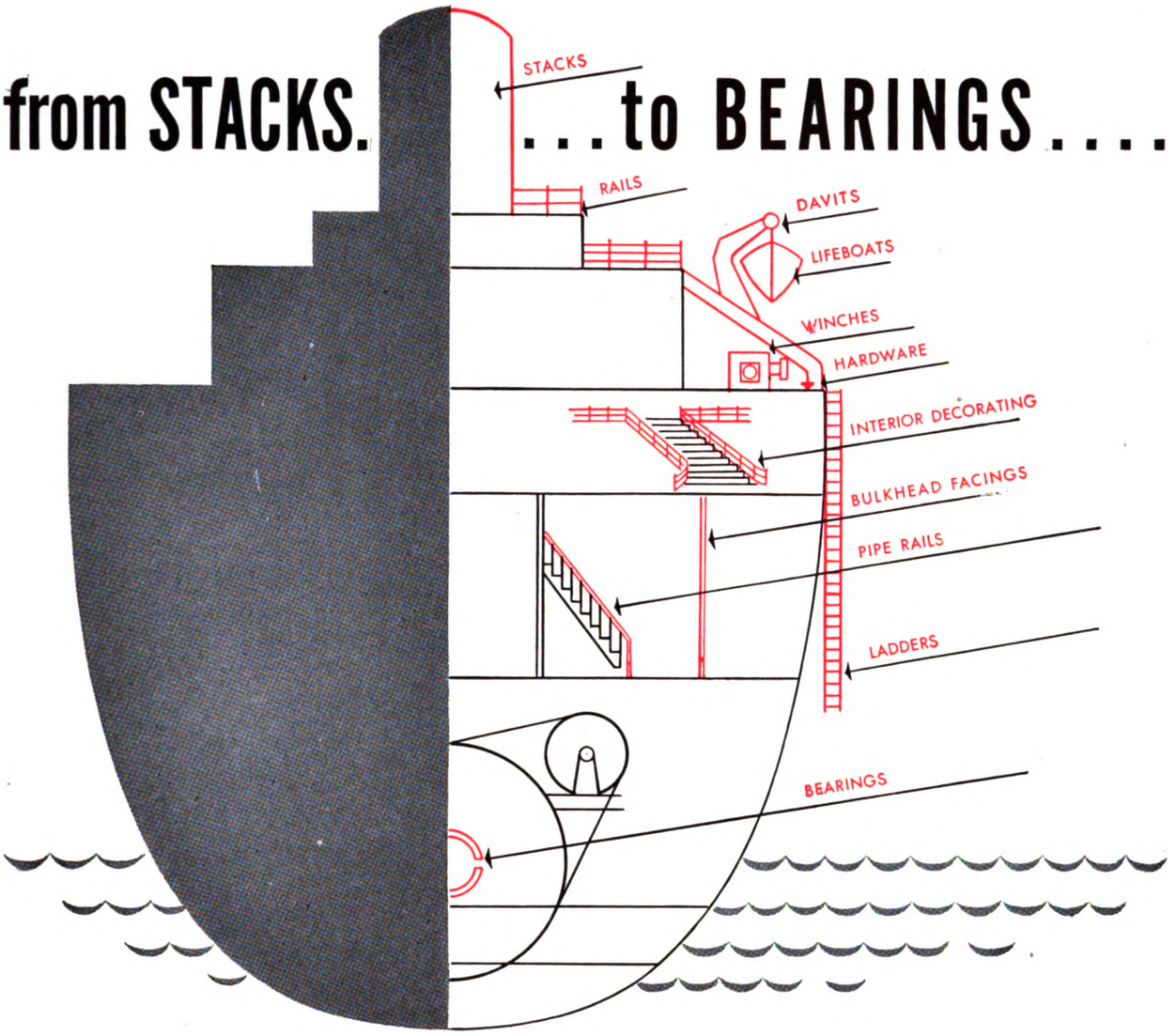
from STACKS. . . . to BEARINGS. . . .



Lightweight ALCOA ALUMINUM . . cuts dead weight . . lasts longer

STACKS of Alcoa Aluminum resist corrosion by sulfurous combustion fumes, reduce topside dead weight . . . WINCHES, LIFEBOATS, DAVITS, weigh only two-thirds as much as heavier metals . . . HANDRAILS, fabricated from stock Alcoa Extrusions, in a wide range of shapes and finishes, stay bright longer. BEARINGS of Alcoa Aluminum are bearing metal all the way through. FOR MANY OTHER USES, Alcoa Aluminum cuts dead weight, increases live load.

How to get the most out of the Alcoa Aluminum you specify is this easy: Choose the right alloy, in its most economical form; fabricate it the best, cheapest way; use the right finish. At every step, Alcoa's range of products and 60 years of light metal experience can help you. ALUMINUM COMPANY OF AMERICA, 1834 Gulf Building, Pittsburgh 19, Penna. Sales offices in principal cities.

ALCOA FIRST IN **ALUMINUM**

ALCOA REG. T. M. ALUMINUM

IN EVERY COMMERCIAL FORM

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Continued from previous issues of The LOG

MORE EVIDENCE OF OXI RESULTS

THE CHEMICAL CLEANING PROCESS FOR THE FIRESIDE OF BOILERS

The following excerpts are taken from ACTUAL REPORTS
(Originals in our files.)

THE GLOVED HAND: **Report No. 7129**
The tubes were practically void of all carbon deposits except front two rows of generating tubes. Deposits on these tubes were brushed off with a gloved hand.

BEFORE AND AFTER: **Report No. 149**
Inspected ship boilers and found them in bad shape. We then started using OXI. Subsequently, after a 6-month cruise we made an annual inspection and found boilers in good condition. Any scale formations present on the tubes could be brushed off with a broom.

HELPS KEEP DECK CLEAN: **Report No. 819**
No shutdowns required to clean boilers after using OXI a short time. When soot blowers are used, only a white puff of smoke is visible from the stack, and no soot or gritty deposits are noticeable. Before using OXI, the upper decks were covered with soot particles and gritty substances. OXI results were very satisfactory.

WELL SATISFIED: **Report No. 356**
Deposits on fireside of tubes were approximately 1/16" throughout boiler. After treatment with OXI for 24 hours, all deposits on tubes and headers had either loosened or had fallen to the furnace floors. Still using OXI and we are well satisfied.

ENTHUSIASTIC ABOUT RESULTS: **Report No. 4103**
Using OXI 4 months and find it keeps back tubes, screen tubes and superheater tubes absolutely clean. "I am convinced that the OXI Crystals are just about 100% perfect."

INCREASED EFFICIENCY: **Report No. 363**
Starboard boiler fireside cleaned by the OXI chemical process quickly. Water walls and generating tubes cleaned to the bare metal. Stack temperature lowered from 385° to 300°, superheat from 715° to 600°. Fuel consumption lowered from 47 to 36 barrels of oil per day—a saving of 11 barrels per day.

FREE OXI MARINE SERVICE IS AS NEAR AS YOUR TELEPHONE

NEW YORK CITY, Watkins 9-7219
BAYONNE, N. J., 3-1432
PHILADELPHIA, PA., Howard 8-5700
Newton Square 0640
BALTIMORE, MD., Wolfe 9655
NEWPORT NEWS, VA., 4-1784
NORFOLK, VA., 2-5966
MOBILE, ALA., 3-2127
NEW ORLEANS, LA., Canal 6151
HOUSTON, TEX., Woodcrest 6-8351
Wentworth 3-6387
GALVESTON, TEX., 2-3039
WILMINGTON, CALIF., Terminal 4-7291
LONG BEACH, CALIF., LB 683-553
SAN FRANCISCO, CALIF., Sutter 1-5890
PORTLAND, OREGON, Broadway 2561
SEATTLE, WASH., ELiot 4262

OXI CORPORATION • • GARY, INDIANA

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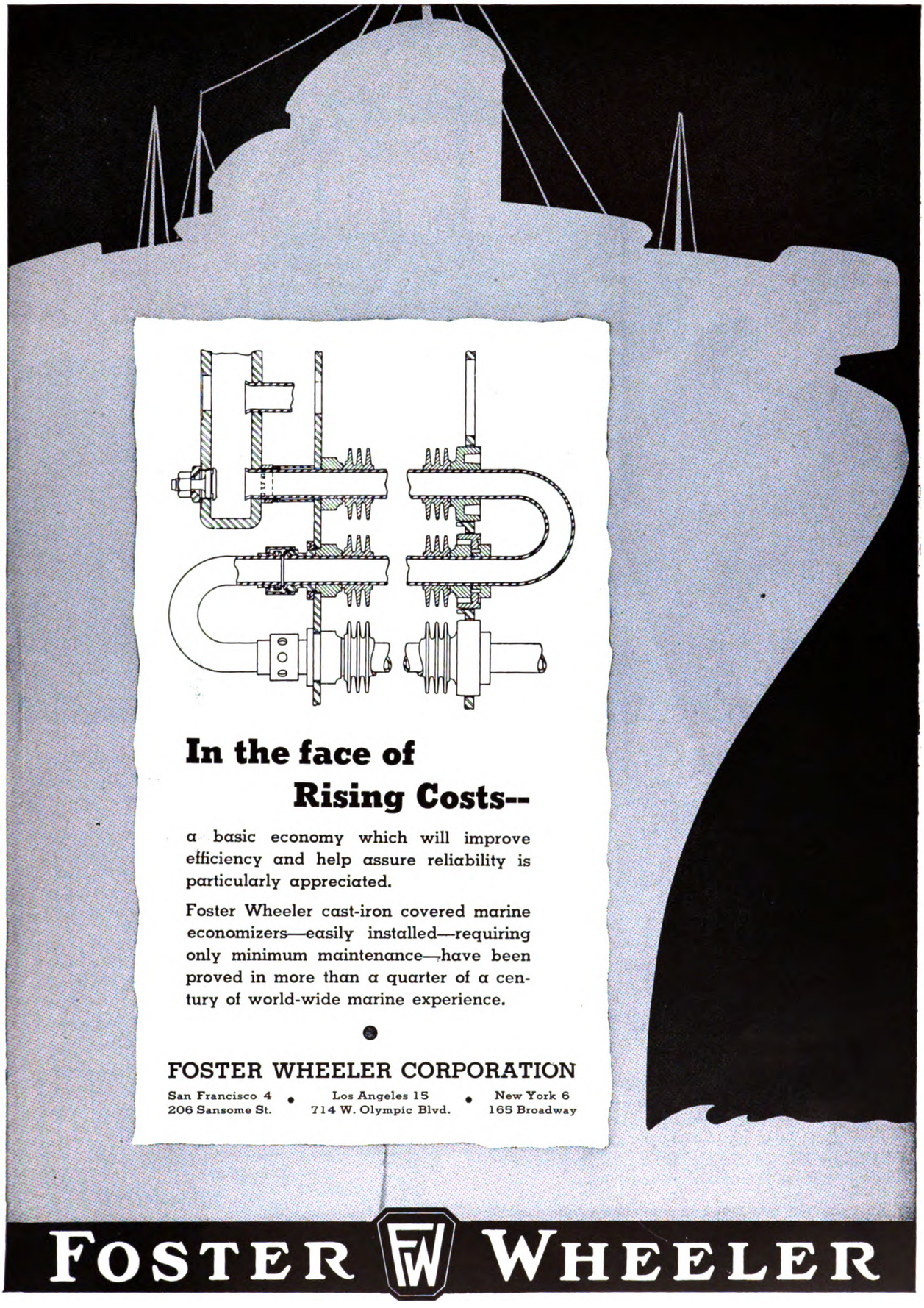

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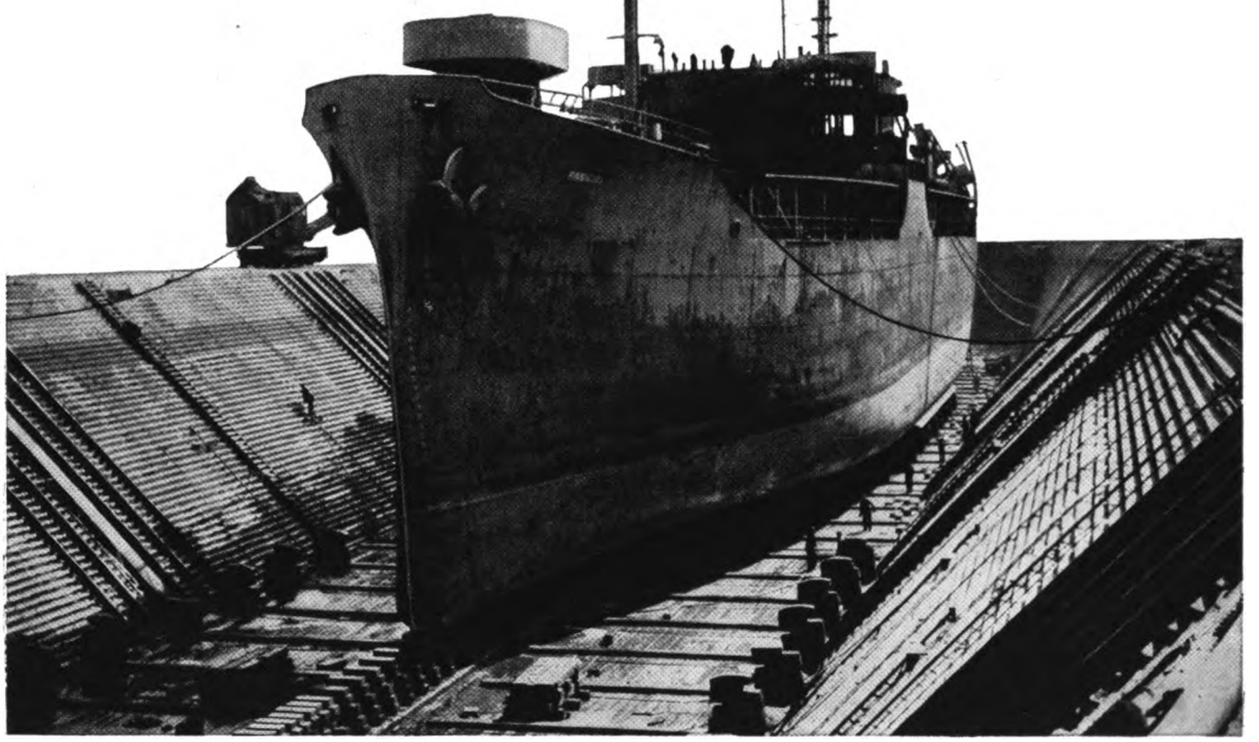
NEWPORT NEWS HAS WHAT SHIPS NEED

7 *Ample drydocking facilities*



TO EVERY shipowner the cleaning, painting and repair of ships—especially the underwater surfaces—is a painful though inescapable necessity.

Painful because it means not only expense but loss of time.

Hampton Roads has had a drydock ever since the port of Newport News was established by the Chesapeake & Ohio Railway. In the port of Newport News itself excellent facilities are maintained for emergency ship repairs.

Near by is the huge plant of the Newport News Shipbuilding & Drydock Company, one of the largest and best-equipped shipbuilding and ship-repairing plants in the world.

At Newport News was constructed the S. S. America, largest merchant vessel ever built in the United States. Here many vessels of the U. S. Navy were built, from the largest aircraft carriers and battleships to the smaller destroyers. Here ships of every type are reconditioned and repaired.

During the late war two enormous new building basins were added. One of these was used for constructing aircraft carriers of the Midway class, largest in the world.

The facilities of the Newport News area are therefore more than ample to meet any repair or reconditioning requirement of any ship with maximum efficiency. In a minimum of time your ship is back in service. That is another example of how Newport News helps ships make money.

The World Commerce Department of the Chesapeake & Ohio is a service organization fully equipped to help exporters, importers, forwarders and ship operators on all problems related to rail and ocean shipping of foreign and intercoastal freight.

If you have a problem, contact G. C. Marquardt, General Manager, World Commerce Department, Chesapeake & Ohio Railway, 233 Broadway, New York 7, N. Y., or any C&O representative.

Newport News is famous for quick ship turn-around

THE CHESAPEAKE & OHIO RAILWAY

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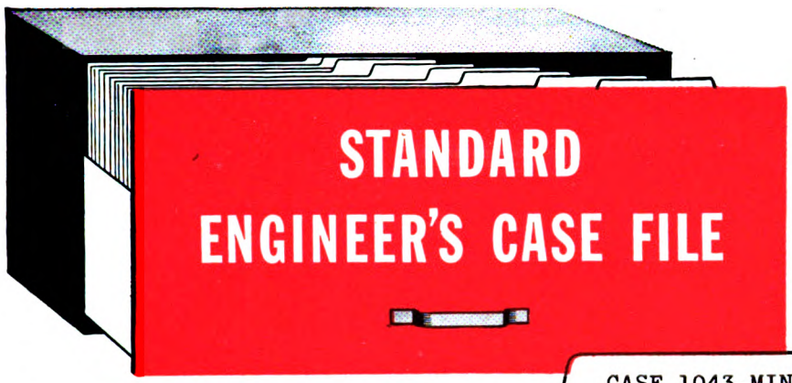
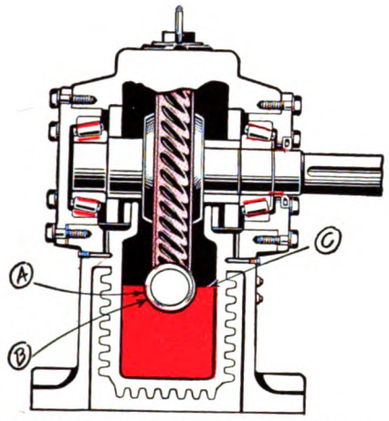


CASE 1043—MINIMIZING LEAKAGE IN LARGE ENCLOSED GEAR SETS.



AIR-COOLED WORM GEAR SPEED REDUCER

In heavy-duty industrial enclosed reduction gears the relatively high viscosity characteristics of Calol Gear Compound cut consumption. Efficient in both conventional and worm types and where such gears carry extra loads or are worn. Comes in eight grades: 60, 100, 120, 135, 150, 190, 225 and 410.

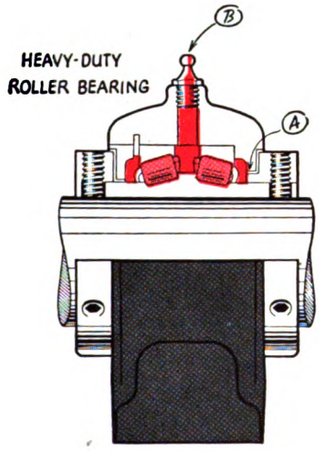
A. Oiliness and extreme pressure additives cushion shocks, prevent vibration, welding and extra wear.

B. Non-corrosive - will not harm bearing or gear metals.

C. Contains effective foam inhibitor - breaks bubbles that form and stops building up of pressure in case.

Calol Gear Compound resists high temperatures and retains good body in all operating conditions. Its numerous viscosity grades make it adaptable to a wide range of applications and conditions.

CASE 1065—SECURING POSITIVE BEARING LUBRICATION IN HIGH RADIATED TEMPERATURES.



Calol S. A. Grease stopped leakage and drippage trouble in a large roller bearing even when bearing temperature, due to radiated heat, reached 250°F. and over. Originally developed for heavy-duty anti-friction bearings, but adaptable to many industrial grease-lubrication services where high ambient temperatures exist. Comes in three grades: No. 00, No. 0 and No. 1.

Has sodium-aluminum soap base - feeds evenly through bearings ... oil stock selected for high heat-resistant qualities.

A. Minimizes seepage through housings and seals.

B. Resists cold temperatures - pumpability remains good in all weather.

Calol S.A. Grease has proved excellent for low-, medium-, and high-speed anti-friction bearings. It is packed in 35-, 108- and 420-pound containers.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

Standard Fuel and Lubricant Engineers are always at your service. They'll gladly give you expert service—make your maintenance job easier. Call your local Standard Representative or write Standard of California, 225 Bush St., San Francisco 20, California.

RPM CALOL

FOR EVERY NEED A **STANDARD OF CALIFORNIA** JOB-PROVED PRODUCT

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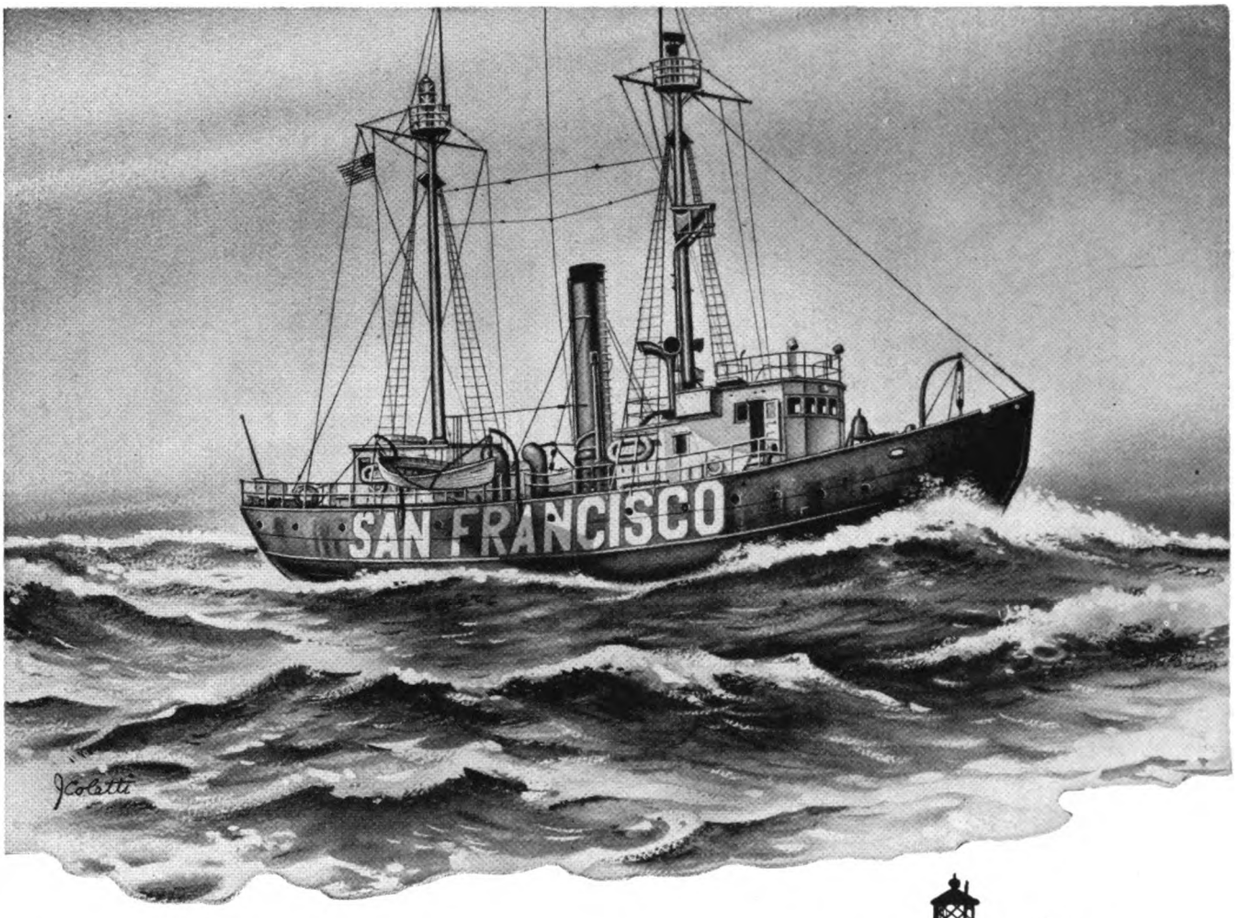

Men who know these three lights

know Hendry quality and service

Past the San Francisco Lightship, the Los Angeles Harbor Light, and the Point Loma Light at San Diego, go the men who best know C. J. Hendry quality and service. On liner, freighter, tug, yacht, and fishing boat, these men know that their needs can be filled immediately from C. J. Hendry's own warehouses, rigging lofts and sail lofts.

During the past 82 years, C. J. Hendry has literally become factory branches for the nation's leading marine equipment manufacturers. Here you obtain every benefit you can from the factory, plus immediate service, plus the convenience of placing one order with one company for all supplies.

C. J. HENDRY FACILITIES for serving you are illustrated at the right. If all our buildings and warehouses were placed side by side, they would form a town like that shown.

C. J. HENDRY CO.

San Francisco	27 Main Street
San Pedro	111-121 S. Front Street
San Diego	930 State Street • 2904 Canon St.

SHIPS CHANDLERY • SAIL LOFTS • RIGGING LOFTS • WAREHOUSES • NETS AND FISHING EQUIPMENT • TUGBOAT SUPPLIES • DIVING GEAR

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save with Seaboard MEGE

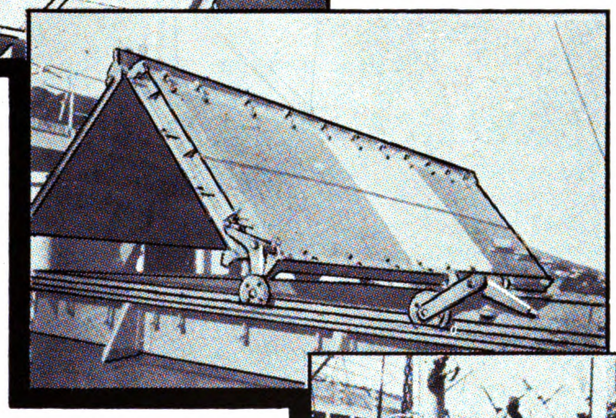
Quick Opening Watertight Hatchcovers

Hatchcover in closed position

Hundreds of stevedore manhours are saved because the ships crew opens and closes hatchcovers while entering and leaving port.

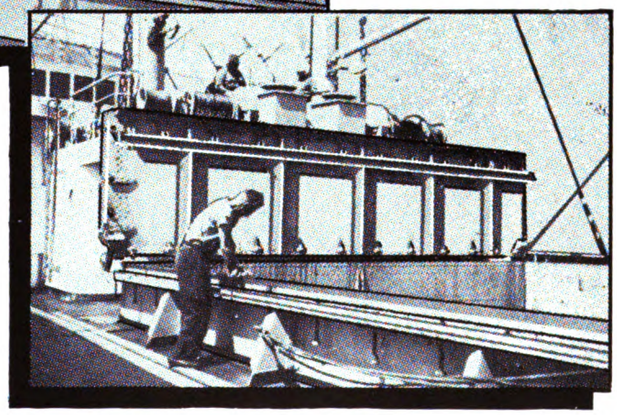
Save on costly damage in storms because Seaboard Mege Quick-opening Hatchcovers are rain tight in 2 to 3 minutes.

Save costly days in port due to time spent opening and closing hatchcovers each night.



Opening fore part of the hatch

Seaboard Mege Pays for Itself in 2 Years.



Open hatchcovers do not obstruct the deck

Send for catalog describing the SEABOARD MEGE quick opening watertight hatchcovers.

SEABOARD MACHINERY CORP.
29 BROADWAY NEW YORK 6, NEW YORK

Pacific Coast Representative: CONSOLIDATED SERVICES, INC.
71 Columbia Street, Seattle, Wash.

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S.M. DURAHART *Marine Finishes - Born of the War . . . Bred to the Sea*

SENSATION
OF THE SEA

We are Proud

to distribute our products through these distinguished companies . . .

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3155 Elliott Avenue
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124 West 4th St., Los Angeles, California

HART and BURNS Inc. *Manufacturers of* DURAHART *Protective Coatings*
Riverside, Calif. — Dallas, Tex.

***FLASH*—Read all about our products in *LIFE*, January 5, 1948, Page 31.**

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THE *Original* DUAL FUEL OIL TREATMENT

L·S·O
TRADE MARK

Liquid SOOTOUT

T. M. REG. U. S. PAT. OFF.

CONSTANT *Cleaning Action* FROM TANK TO STACK

MORE and more steamship companies are adopting the use of Liquid SOOTOUT. This popularity is due to its outstanding results.

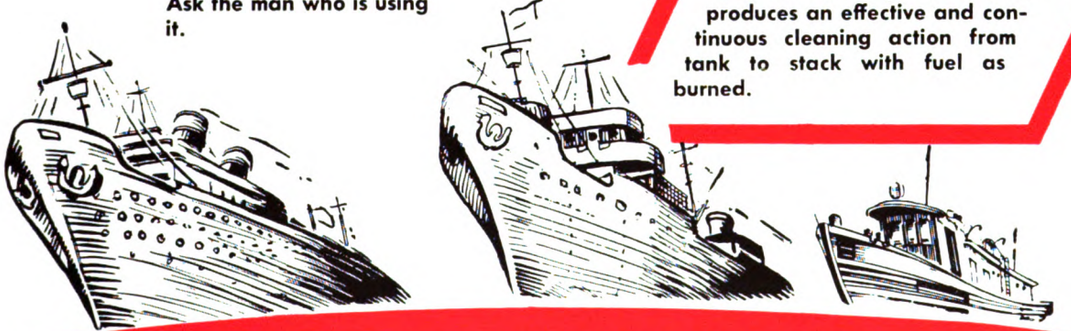
Along the waterfront and in the main offices, chiefs, port engineers as well as main office executives, are hearing the name Liquid SOOTOUT— L-S-O; its top performance is making it a topic of conversation.

Liquid SOOTOUT—L-S-O, is the successor to the old-type powder fuel oil treatments and sludge solvents. Liquid SOOTOUT is different as it provides DOUBLE CLEANING ACTION FROM TANK TO STACK, with less cost and less labor.

Ask the man who is using it.

FOR TANK—Liquid SOOTOUT is a concentrated chemical liquid which, when applied to fuel oil in proper proportions, disperses condensation, also sludge forming elements, and reduces strainer, preheater, and nozzle maintenance.

FOR FIRESIDE—Liquid SOOTOUT removes carbon scale and slag in combustion areas, economizers and superheaters. It produces an effective and continuous cleaning action from tank to stack with fuel as burned.



Warehouse Stocks Available At

Baltimore, Maryland	The Terminal Warehouse Co.	Los Angeles, California	J. A. Clark Warehouse Co.
Boston, Massachusetts	Wiggin Terminals, Inc.	New Orleans, Louisiana	Douglas Public Service Corp.
Brooklyn, New York	Lehigh Warehouse Corp. of Brooklyn	Norfolk, Virginia	Southgate Storage Co.
Galveston, Texas	Galveston Survey Agency	Philadelphia, Pa.	Terminal Warehouse Co.
Houston, Texas	Universal Terminal Warehouse Co.	San Francisco, Calif.	San Francisco Warehouse Co.
Jacksonville, Florida	Peninsula Warehouse Co.	Seattle, Washington	Eyres Transfer & Warehouse Co.

LUBAID CO., Milwaukee 1, Wisconsin

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SHAFT ALLEY Chatter

Alcoa Elects Three New Vice Presidents

Frank K. Bell, William H. Griffin, and Robert D. Weeks have recently been elected vice presidents of the Alcoa Steamship Company by that company's board of directors.

Mr. Bell joined the Alcoa Steamship Company in October, 1942, coming directly from his post as Director of Shipping for the Australian Government War Supplies Procurement office to which position he had been appointed shortly after the United States entered the recent war.

Prior to this Mr. Bell had spent a number of years with the Cunard Steamship Company, Ltd., and with the N.Y.K. Line as general passenger agent in charge of advertising, publicity and passenger business. Shortly after joining the Alcoa Steamship Company, Mr. Bell went to Trinidad as the company's resident manager there. In this position he has directed the company's activities in the Caribbean territory from St. Thomas, Virgin Islands, to Paramaribo, Dutch Guiana. In his new position as vice president, he will be in charge of all company offices outside of the United States, all foreign agents, passenger traffic, and advertising. He will make his headquarters in Trinidad for the present but will move to the New York office some time later in 1948.

Mr. Griffin, after his release from the Navy in 1919, held positions with Caston, Williams & Wigmore Steamship Corporation and with the East Baltic Line where he was vice president. In February, 1929, he joined the Alcoa Steamship Company and in 1932 was appointed general traffic manager. He was elected secretary and assistant treasurer of the company in July, 1942, which offices he will continue to fill in addition to the vice presidency. As vice president Mr. Griffin will have charge of all freight traffic and the company's Chicago and St. Louis offices.

Mr. Weeks left the position of assistant manager of the chartering department of the Munson Steamship Line in 1928 to become operating manager of the Alcoa Steamship Company. In July, 1942, he was elected treasurer and assistant secretary, which offices he will retain with his vice presidency. As vice president Mr. Weeks will be in charge of all operations including scheduling, operating, pier and cargo handling, purchasing, inventory, insurance and claims as well as the company's Baltimore and Norfolk offices.

⚓ ⚓ ⚓

Bethlehem Launches New Ship for United Fruit

Bethlehem-Sparrows Point Shipyard recently launched the ss MORAZAN, last of a series of nine refrigerated cargo-passenger vessels it is building for the United Fruit Company.

As the other United Fruit ships of the YAQUE class, the ss MORAZAN is rated at 16 knots, with refrigerated cargo capacity of 195,000 cubic feet and is of 5,000 deadweight tons. Her over-all length is 385 feet, 6 inches. She has first class passenger accommodations for twelve and will carry a crew of 48.

Five of the United Fruit ships already have been delivered.

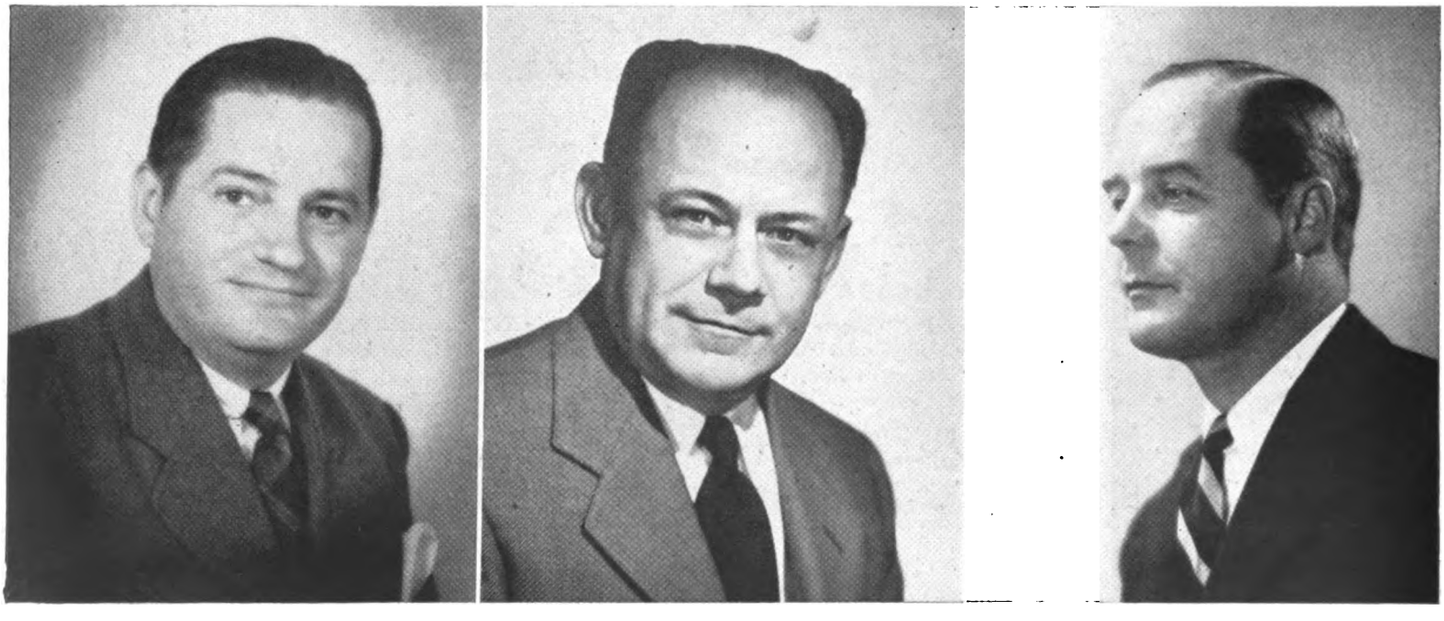
⚓ ⚓ ⚓

John Cushing Receives Presidential Certificate

The Navy presented one of its highest civilian awards to John E. Cushing, president of the Matson Navigation Company. The award, the President's "Certificate of Merit", was presented by Rear Admiral D. B. Beary, Commandant of the Twelfth Naval District, at district headquarters in San Francisco.

During the war Mr. Cushing first served as Assistant Deputy Administrator of the U. S. War Shipping Administration with headquarters in Washington, D. C. Later he became Assistant Deputy Administrator in charge of Pacific Area with headquarters in San Francisco.

NEWLY-ELECTED VICE PRESIDENTS OF ALCOA STEAMSHIP COMPANY . . . FRANK K. BELL, left, WILLIAM H. GRIFFIN, center, and ROBERT D. WEEKS, right.



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SHAFT ALLEY (continued) Chatter

Tacoma Propeller Members Elect 1948 Officers

At the December meeting of the Propeller Club, Port of Tacoma, members elected officers for 1948. At the same meeting they voted to donate $150 for purchase of food stuffs to go aboard the Christmas Ship destined from the North Pacific to Europe.

Election results follow: C. N. Klitgaard, Standard Oil Company, president; Shelby Coates, Harbor Master, City of Tacoma, vice president; Charles C. Cramp, Shaffer Terminals, Inc., reelected secretary; C. E. How, Shaffer Terminals, Inc., reelected treasurer. Elected to the Board of Governors for three-year terms were: A. N. Drips, Rothschild International Stevedoring Company; Carl Swenson, J. T. Steeb and Company; and Lewis Boen, Tacoma Marine Supply Company.

⚓ ⚓ ⚓

Buckley and Varcoe Receive APL Promotions

American President Lines recently announced two promotions in the company. M. J. Buckley, formerly vice president in charge of freight traffic, who has been promoted to senior vice president in charge of planning and development, and W. K. Varcoe, formerly freight traffic manager to assistant vice president and freight traffic manager.

Both men are old APL employees, Mr. Buckley joined the company in 1922 as assistant freight traffic manager and in 1936 was promoted to vice president in charge of freight traffic, and Mr. Varcoe began his employment with the company in 1924 and advanced in the freight department to freight traffic manager in 1946.

⚓ ⚓ ⚓

Marine Exchange Elects New Officials

Election of the following new officers to serve two-year terms on the executive committee of the Marine Exchange are announced by M. A. Cremer, exchange manager:

William E. Cathcart, vice president and general manager of Marine Electric Co.; Thomas J. Cokely, vice president of American President Lines; J. Harding Jensen, manager of Matson Line terminals; A. E. Kihn, marine department of Standard Oil; Joseph A. Moore, Jr., president of Moore Dry Dock; Roy C. Ward, vice president of Cosgrove & Co.

Members continuing on the executive committee through 1948 are:

John E. Cushing, president of Matson Line; John Parker, president and manager of American Marine Paint Co.; H. H. Pierson, traffic manager of States Line; K. C. Tripp, Pacific Coast manager of Moore-McCormack Lines; R. V. Winquist, vice president of General Steamship Corp.

Those elected from executive committee to serve as officers are:

A. E. Kihn, president; J. A. Moore, Jr., K. C. Tripp and R. V. Winquist, as first, second and third vice presidents, respectively, and J. H. Jensen, treasurer.

CHRISTMAS FROLICS BY SAN FRANCISCO MARITIME GROUPS . . . Top row, THE MARINERS CLUB OF CALIFORNIA holds its Christmas High Jinks at El Jardin. Left to right in first picture are, standing, FLETCHER MONSON, General Engineering, 1947 and 1948 President of the club; CLAUDE KNUDSEN; ALEX JOHNSTON, Pacific Marine Refrigeration Company; CAPTAIN BILL SCHEUBROCK, retired, USAT; JIMMY ANDERSON, USAT; TOM DEE, Dee Engineering Company; FELIX BILLIG, E. V. Winter Company and Secretary of the club; GENE WINTER, E. V. Winter Company; L. H. HELMKE, U. S. Maritime Commission; ARNOLD HEITLINK, Milo's Marine Guide; unidentified; TED RACKERBY, Terco Equipment Company. Seated, JACK McLAREN, Moore Drydock Company; BILL SCHWARTZ, Alvin R. Campbell Company; next two unidentified. Right, ALEX JOHNSTON; CAPTAIN ROSS WRIGHT; FRED ARCHBOLD, Hough & Egbert; JOHN CORDES, Cordes Brothers; RONNIE MERCEREAU, Duke's Packing Company; JACK BUTLER, Saverite Engineering Company; AL PITTMAN, Hagan Corporation; BERT HOTCHKISS, Charles E. Lowe Company; WORTH JOHNSON, Republic Supply Company; stooping, MILO ATKINSON, Milo's Marine Guide.

Bottom row, left, COMMODORE LISLE F. SMALL, President of the United Engineering Company, entertaining, at the piano, a group of revellers at the Christmas party of the Propeller Club at the St. Francis Hotel. Right, Cargocaire Engineering Corporation table at the Propeller Club Christmas party at the St. Francis Hotel.

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SHAFT ALLEY (continued) Chatter

1948 OFFICERS OF THE MARINERS CLUB OF CALIFORNIA . . . left to right, JOHN BERTOLANI, General Steamship Company, Board of Governors; FLETCHER MONSON, General Engineering Co., newly elected President of the Mariners; COMMODORE L. F. SMALL, United Engineering Co., Board of Governors; and FELIX V. BILLIG, E. V. Winter Co., Secretary-Treasurer.

Mariners Club of California Elect 1948 Officers

Fletcher Monson, General Engineering and Dry Dock Company, San Francisco, was reelected president of The Mariners Club of California for 1948. Captain Al T. Berry, United States Army Transport Service, was again chosen vice president and Felix V. Billig of the E. V. Winter Company was named secretary-treasurer for his fourth term.

Four new members of the Board of Governors elected were Commodore L. F. Small, United Engineering Company; John Bertolani, General Steamship Corporation; William Beck, Dahl-Beck Electric Company and Captain William Fisher.

These four, with the following holdovers, make up the board: Tom Short, Thos A. Short Company; Jos. Gisler, Jos. F. Gisler Company; N. O. Gunderson, Mackay Radio & Telegraph Company; William Leahy, Louis T. Snow Company; Rear Admiral James Alger, USCG, ret.; Captain S. E. Allen and Charles Rice of the Smith-Rice Company.

The nominating committee was composed of Louis Ets-Hokin, Ets-Hokin & Galvan; N. O. Gunderson, Tom Short, Jos. Gisler and Charles Rice.

On Wednesday, February 4th, a joint luncheon meeting of the San Francisco Propeller Club and the Mariners Club will be held on Treasure Island, with Captain E. N. Senn, commanding officer of the United States Naval Station there, acting as host. The guests will be taken on a tour of the island.

⚓ ⚓ ⚓

Seattle Shipyard Purchased By Alaska Terminal Company

Lake Washington Shipyard at Houghton, Washington, near Seattle, has been purchased by the Alaska Terminal and Stevedoring Company. Two of the buildings at the yard will be moved to Pier 42, on Seattle's central waterfront for shop and office space use. George F. Kachlein, attorney for the purchaser, has announced the primary use of the shipyard area will be for storage and as a winter tie-up moorage.

AN EVEN 300 SHIPPING MEN attended the 20th annual cruise of the Portland Shipping Club at Portland, Oregon, on December 13, 1947. The LOG camera caught these shots: All left to right: Top row, BENGT HAEHNEL, Stockholm, Traffic Manager, Johnson Line; F. P. DRAVIS, Tacoma, Dravis Engineering and Machine Works; SWEN SWENSON, Portland, W. R. Grace and Company; H. H. WRIGHTSON, Coastwise Line, Portland; FRANK KIRCHNER, H. S. ANDREWS, North Pacific Shipping Company, Vancouver, British Columbia; JACK SHIELDS, Coastwise Line, Portland; A. BELANGER, North Pacific Shipping Company, Vancouver, British Columbia; DAVID GIRDWOOD, Girdwood Shipping Company; R. J. BETTENDORF, Commissioner; J. R. BOWLER, Port Manager; WILLIAM McGREGOR, Commissioner; J. L. DYER, Commissioner, Port of Astoria; LARRY HOFFMAN, L. Hoffman War Surplus Company.

Bottom row, MATT TROUT, Marine Electric Company; AL NEUMEISTER, Zidell Ship Dismantling Company; W. C. WOOD, William C. Wood Company; L. M. DILLON, R. B. GILLIAM, Pacific World Shipping Company; W. J. ROBBINS, W. J. "Bill" Robbins Company; LAWRENCE BARBER (standing), The Oregonian; N. A. PERKINS, W. J. "Bill" Robbins Company; L. R. ALLEN, Port Engineer, Pacific Tankers; EUGENE SALVO, Marine Electric Company; CAPTAIN CARL PRINS, Portland Harbor Department; R. W. HUGET, RAY DALEY, Northwest Marine Iron Works; HUGH L. MacDONALD, Harbor Patrol, Portland Police Bureau; RALPH BOONE, West Coast Terminals; CAPT. HUGH E. SHAW, Shaw Brothers and Associates.

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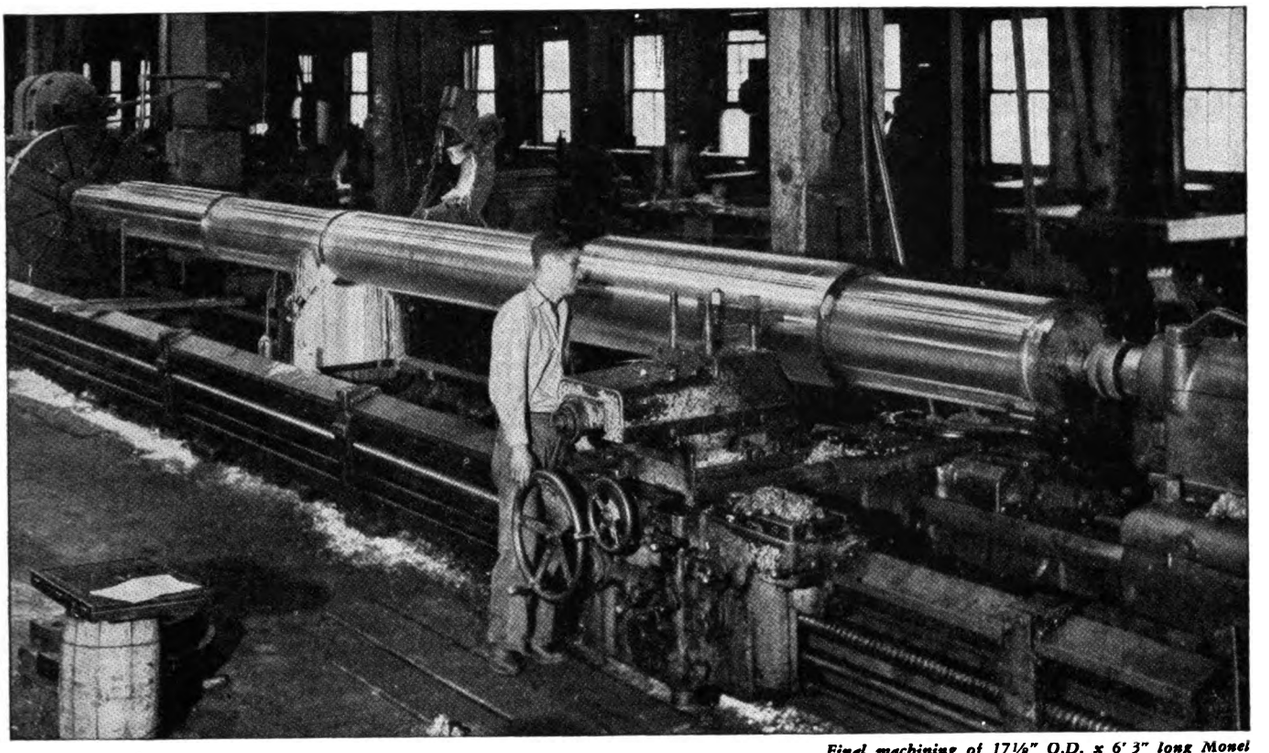

Final machining of 17⅛" O.D. x 6' 3" long Monel sleeves on steel propeller-shafts, for installation in four new 3000 yd. Army dredges building at Ingalls Shipbuilding Co., Pascagoula, Miss. Centrifugal cast Monel sleeves made by Shenango-Penn Mold Co., Dover, Ohio.

Announcing . . .

Greater Protection for Large Propeller Shafts

CENTRIFUGALLY CAST MONEL* SLEEVES RESIST ABRASION AND CORROSION . . . SHOULD OUTLAST OLD-STYLE SLEEVES 3 TIMES OR MORE.

Here's more news about propeller-shaft sleeve durability in dredging work . . . of interest to every marine engineer.

In normal operation, a river dredge is headed up stream and anchored. Propellers are kept turning slowly to relieve the strain on anchor chains.

Sandy water stirred up by the dredging bucket is constantly sucked in and around the propeller-shaft bearings. Under these severe conditions, bronze sleeves wear out quickly. So engineers called for better sleeves made of a harder, longer-wearing metal.

The problem was a tough one. It involved choosing a satisfactory sleeve material for 16 water-lubricated bearings on the twin propeller-shafts in four new 3000 yard Army dredges. But naval architects and Army engineers came up with the solution: sleeves of centrifugally cast Monel in B. F. Goodrich Cutless Rubber Bearings.

Based on past performance, these hard Monel sleeves should keep shafts turning at least 3 times longer.

For, in addition to hardness, Monel is corrosion-resistant, rustproof, tough, and strong.

If *you* should run into a difficult metal problem, we'll be glad to cooperate in solving it. Simply submit the details to our Marine Department.

*Reg. U.S. Pat. Off.

Showing final assembly at outboard end of shaft with Monel sleeve to operate in Cutless Rubber Bearings.

How the sleeves are fitted

The Monel sleeves were shrunk-fit to their shafts by Dibert, Bancroft, & Ross, Ltd., of New Orleans, La. They were expanded by placing them in high flashpoint oil, raised to 675° F., for 1½ hours, then shrunk onto the shaft.

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SHAFT ALLEY (continued) Chatter

MOORE-McCORMACK LINES inaugurates new C-3 shipping facilities for the West Coast. Aboard the MORMACLAND, the first of five C-3's allocated to Pacific Republics Lines for service between the west coast of North America and the east coast of South America, were festivities honoring the ship's arrival at West Coast ports. Shown here are Moore-McCormack officials aboard the ship as she anchored in Long Beach harbor, left to right: W. C. CLARK, Operating Manager, San Francisco; WATSON B. SMITH, District Passenger Manager; ANDREW B. SMITH, District Manager; R. R. ABBOTT, Traffic Manager and V. C. CAIN, Assistant Traffic Manager, the latter four all of Los Angeles.

New Orleans SS Association Re-Elects Officers

The New Orleans Steamship Association re-elected as officers at its thirty-sixth annual meeting recently E. J. McGuirk, president; Furman B. Pearce, vice-president; Dallas M. Ward, treasurer; John L. Flettrich, secretary, and George H. Terriberry, counsel.

Bethlehem West Coast Yards Announce Promotions

W. M. Laughton, general manager of Bethlehem Steel Company, Shipbuilding Division, West Coast Yards, announced the recent promotions in the company's personnel.

W. A. Harrington, newly appointed manager of the San Pedro, California, yard of Bethlehem, has succeeded E. C. Rechtin now with Bethlehem in the east in an executive capacity. Joining the San Pedro yard in 1923 as chief estimator, Mr. Harrington later became general yard foreman and sales manager, and in 1944 became assistant manager of the yard.

Harvard P. Stewart, appointed manager of marine sales for the company's San Francisco Bay Area yards, started work at Bethlehem's San Francisco yard in 1934 as a mold loftsman, later being transferred to the estimating department and the sales department. He is a member of the Society of Naval Architects and Marine Engineers and a member of the executive committee of the Northern California section of the society.

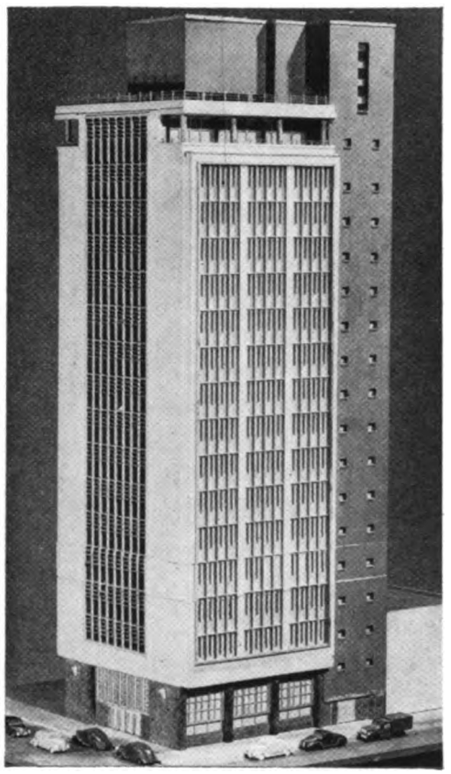
Russell R. Sweeny, formerly assistant to the general superintendent at Bethlehem's San Francisco yard has been appointed manager of the company's Alameda Repair yard. He replaces F. S. McGuigan who has been transferred to the company's eastern offices. Mr. Sweeny came to work for Bethlehem in 1916, as a shipfitter apprentice at what was then the Union Iron Works. In 1931 he was made hull department foreman at the Alameda repair yard and in 1939 was appointed assistant to the general superintendent at that yard. He returned to the San Francisco yard in 1940, where he was placed in charge of conversion work on the PRESIDENT LINCOLN, and in 1942 he was assistant to the general manager.

Standard Fruit Moves Offices

Standard Fruit and Steamship Co. is now located in new offices in the Carondelet Building in downtown New Orleans. Formerly occupied by the Progressive Bank and Trust Company, the space is now occupied by the branch freight and passenger department, with main offices remaining in the American Bank Building.

A. C. Kerr of Lykes Awarded Presidential Certificate

A. C. Kerr, general vice president of Lykes Bros. Steamship Co. Inc., has been awarded the Presidential Certificate of Merit. Head of the London bureau of the company, he was awarded the certificate for his services as European director of the War Shipping Administration during hostilities with the Axis.



NEW WATERMAN BUILDING . . . the Waterman Steamship Corporation will move to its new building, model photograph shown here, in Mobile during the late summer of this year, according to an announcement by that Company. The South's newest and most modern skyscraper, providing more than 50,000 square feet of fully air conditioned floor space, will be used exclusively for the main offices of the Waterman organization and its subsidiary Companies.

Texas Transport Gulf Agent For Argentine State Line

Appointment of the Texas Transport and Terminal Co. as Gulf general agents of the Argentine State Line has been announced. Officials of the latter company reported that the ss RIO IGUAZU will be the first Argentine Line ship to sail to Buenos Aires under the newly appointed agency. She will leave New Orleans Jan. 22.

NEW APPOINTMENTS at Bethlehem Steel Company, Shipbuilding Division, West Coast Yards . . . W. A. HARRINGTON, left, Manager of the San Pedro yard; HARVARD P. STEWART, center, Manager of Marine Sales for the company's San Francisco Bay Area yards; RUSSELL R. SWEENY, right, Manager of Bethlehem-Alameda Repair Yard.

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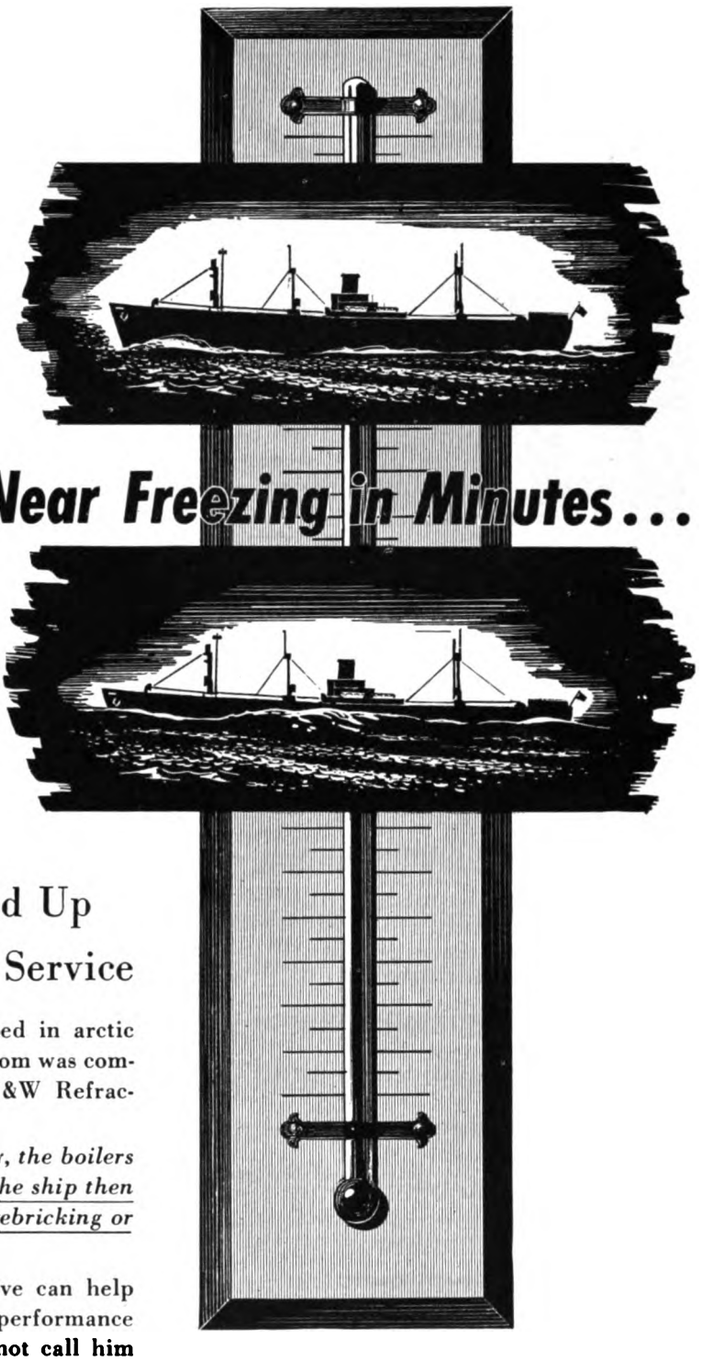

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SHAFT ALLEY (continued) Chatter

WM. ANDERSON, left, with HERB PICKERING, right, President of W. H. Wickersham & Co., at a farewell "no host" dinner party, arranged by Wm. Borchert, Keystone Purchasing Agent, honoring Anderson when he left Los Angeles harbor to assume new duties as Manager of the Maintenance and Repair Division, Keystone Shipping Co., at Philadelphia.

Keystone Shipping Transfers Anderson to East Coast

Moving to Philadelphia to assume new responsibilities as manager of the maintenance and repair division of Keystone Shipping Company is William Anderson. Anderson had served since June, 1937, as division superintendent of Keystone's Pacific Coast operations, with headquarters at W. H. Wickersham & Co., San Pedro.

Captain D. C. Brodginski succeeds Anderson on the west coast and will headquarter at the offices of Thornly & Pitt, San Francisco agents for Keystone.

W. H. Wickersham & Co., headed by Herb Pickering, continues it 25-year association with Keystone by retaining the agency in Southern California. Captain D. Davidson, port captain, and R. J. Hicks, inspector, remain at the Wickersham offices in San Pedro.

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NEWLY-NAMED VICE PRESIDENT of Interocean Steamship Company . . . A. A. (ANDY) MORAN.

Interocean Steamship Names A. A. Moran Vice President

A. A. (Andy) Moran, prominent in Pacific Coast shipping for many years, has been named vice president of Interocean Steamship Corporation, San Francisco, succeeding R. W. Cabell, transferred to the firm's New York office as vice-president in charge of Atlantic Coast operations.

Mr. Moran formerly was with the Dollar Lines and, as freight traffic manager between 1918 and 1927, was instrumental in promoting that firm's round-the-world service. Before going with Dollar, he was for twelve years with Swayne & Hoyt, former San Francisco shipping firm, and, for several years managed the intercoastal service of the Panama-Pacific Line when their steamers FINLAND and KROONLAND ran regularly between New York and the Pacific Coast.

Since 1942 Mr. Moran has been manager of the Port of Redwood City, located on San Francisco Bay, where he developed a modern marine terminal which was selected by the United States Navy as a shipping point for vast quantities of packaged petroleum products during the war. No successor to his Redwood City post has yet been named.

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Mississippi Ship With A Mississippi Master

The ss AIMEE LYKES, a C-2 type vessel of the Lykes Bros. Steamship Co., Inc., is the largest ocean-going cargo vessel ever registered with the Port of Gulfport, Mississippi, as her home port, according to Frank J. Raymond, Deputy Collector of Customs for the Port of Gulfport.

Built in 1944 at Oakland, California, by the Moore Drydock Company for the account of the War Shipping Administration, the vessel was originally named the Westward Ho and her home port was San Francisco, California; however, the ship was among 16 C-2 type vessels purchased recently by Lykes Lines and both her name and home port were changed to conform to company policy.

MASTER of the AIMEE LYKES . . . CAPTAIN K. T. CRAFT.

The ship is one of the most modern cargo vessels of the American Merchant Marine and is typical of the scores of C-type vessels which make up the vast fleet of the Lykes Bros. Steamship Co., Inc. She is 438 feet in length; has a beam of 63 feet; and a speed of 15½ knots. Her displacement is 13,860 tons, deadweight 8,752 tons, and her bale cubic capacity is 537,000 feet.

Captain K. T. Craft of 7713 Third Street, Waveland, Mississippi, is Master of the ss AIMEE LYKES.

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Winchester Announces New Pacific Coast Manager

Lester H. Cloud is the new Pacific Coast manager of J. H. Winchester & Company, Inc., according to an announcement by Winchester Noyes, president. Mr. Cloud has long been active in Pacific Coast steamship circles, having been district manager at San Francisco during the war for the Luckenbach Steamship Company and California manager for the Girdwood Shipping Company of Seattle. In recent months he has been with Winchester's San Francisco office handling charters and sales of vessels.

Mr. Noyes also announced appointment of H. J. Tully, former operating manager for Winchester at San Francisco, as assistant Pacific Coast manager. Mario Pelvers continues with Winchester in charge of traffic and solicitation.

WINCHESTER & COMPANY's new appointees. . . . Left, H. J. TULLY, Assistant Pacific Coast Manager and, right, LESTER H. CLOUD, new Pacific Coast Manager.

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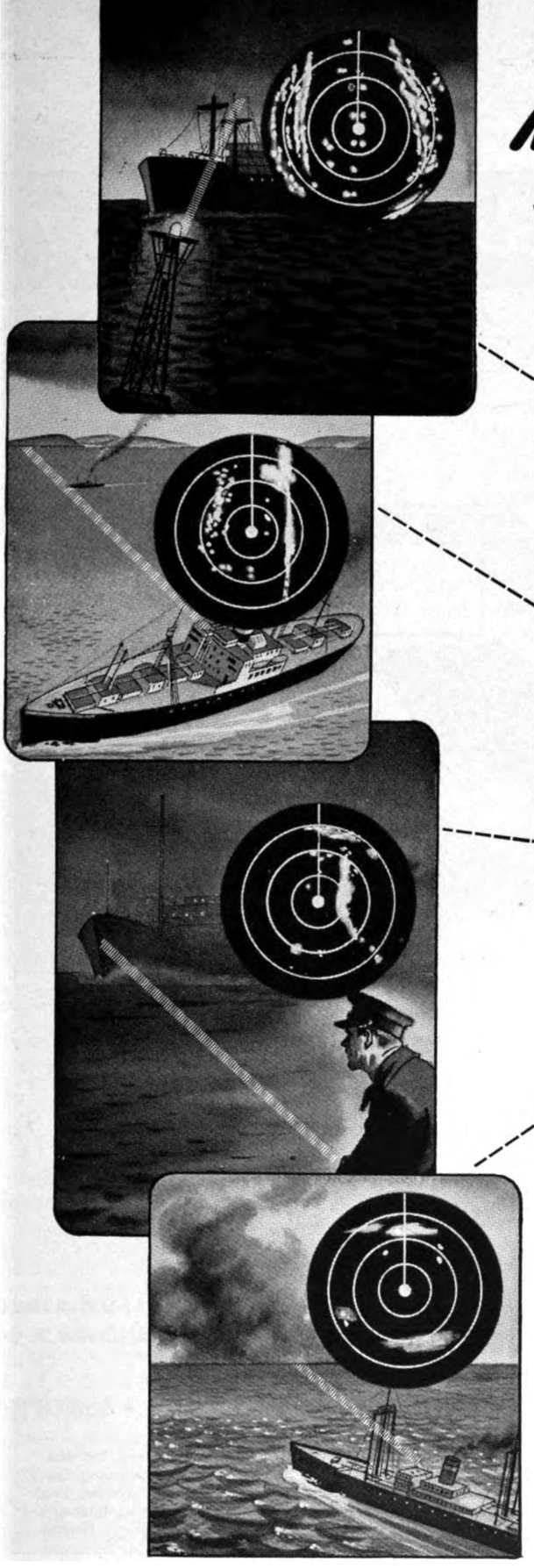

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Radiomarine's 12 inch viewing scope shows 86 square inches of picture area. Pictures are clearer, larger and steadier.

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Many navigators use Radiomarine Radar to detect and plot the movement of storms, rain squalls and heavy cloud formations. This information gives the captain early warning to prepare for bad weather and, where possible, to avoid it.

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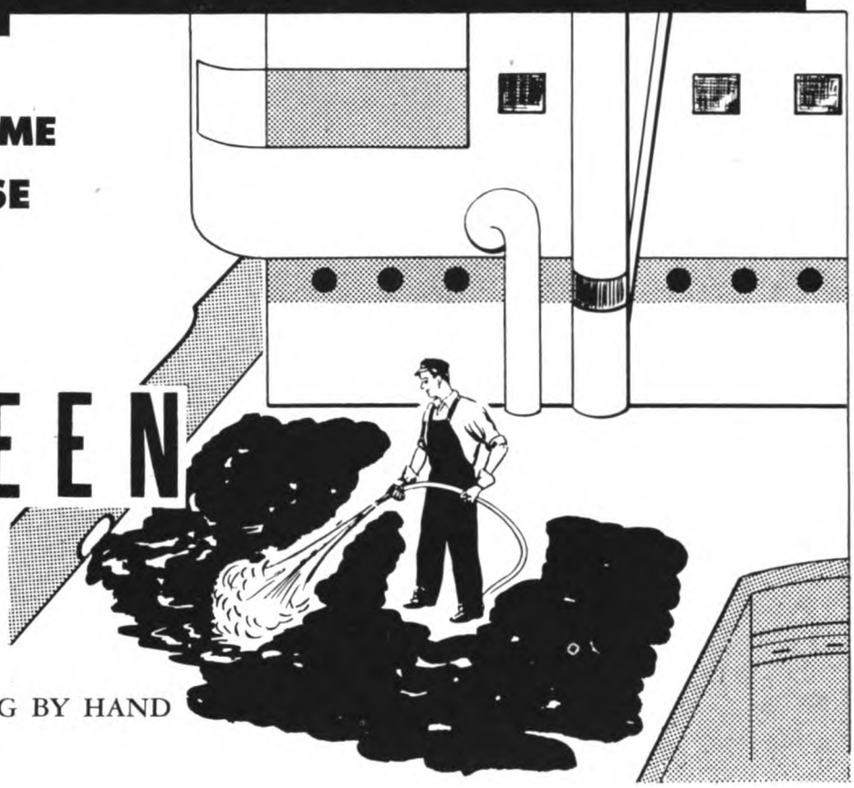

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OF AMERICA'S MARITIME INDUSTRIES
Shipbuilding Naval Architecture
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MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

FEBRUARY, 1948 Vol. 43, No. 2

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Editorial Features

America's Second Largest Ship—
SS ARGENTINA....24
Washington Reporting....28
CHAIRMAN WEICHEL SAYS....29
Distribution of World Tanker Fleets....30
You Can Earn Profits With a
Modern Power Plant....32
Lubrication of Main Propulsion Power
Plants Aboard Ship....38
MS SEATTLE Features Electric Cargo
Handling Cranes....40
$2,000,000 Pier For Port of Portland....48
Operating Ideas
Turbine Operation Influenced by
Condenser Characteristics....50
How to Make Your Capacity
Plan Earn Money....51
Industrialist Urges Support of
Anti-Inflation Program....54

Departments

Shaft Alley....16-20
Societies....42-44
OPERATING IDEAS....50-53
Equipmentalk....60-66

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San Francisco

U.S. Passenger Ship Status

Figures worked up by the Research Department of the National Federation of American Shipping show that the United States on January 15, 1948, had an active passenger fleet of 39 ocean-going passenger vessels with accommodations for 9,535 passengers operated by 13 steamship companies. This compares with 127 vessels of 38,357 passenger capacity operated by 31 companies in 1939.

At least 10 additional passenger type vessels with 4,105 accommodations are being reconverted, and one new vessel building, will be placed in service during 1948. Two additional passenger ships with a capacity of 1,450 may be reconverted in 1948.

The total passenger fleet anticipated by the end of 1948 to be operated by 14 American steamship lines will be 52 vessels with accommodations for 15,642 passengers. This will be about 31 percent of the number of vessels operated in 1939.

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Alcoa Carried Record Passenger Business

The Alcoa Steamship Company during 1947 carried more passengers than in any other year in the company's peacetime history. Alcoa's passenger and freight ships have almost without exception sailed with a full complement of passengers for the past twelve months. The company reports that the demand for passenger accommodations continues to be great. Already booked well into 1948, they predict that the coming year will bring with it a yet bigger passenger business.

The company also reports that its freight business, which was good in the early months of 1947, dropped off somewhat during the second half of the year. The decline in cargo is attributed to foreign currency restrictions, the world-wide dollar shortage, and the Venezuelan Government's limitations on cargo to many of its ports.

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Higgins Delivers Ship to Sweden

Sailing from New Orleans in December was a 256-foot cargo vessel believed by shipbuilder Andrew J. Higgins, Jr., to be the first vessel ever built by a United States firm for Swedish interests.

The 2,000-ton HAVSBRIS (Sea Breeze) was constructed by Higgins, Inc., for the Swedish firm of REDERIAKTIEBOLAGET BRIS of Stockholm. The ship carries a crew of 24 and is capable of 11 knots. In British Guiana she will pick up a cargo of bauxite for delivery in Buenos Aires, and following her maiden voyage will operate between east coast ports of South America.

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The merchant marine of Finland, which in 1939 consisted of 284 vessels of more than 593,800 tons, now aggregates 423,423 tons, and now includes 191 ships. At the war's end, Finland had only 125 ships, totaling 220,290 tons, according to The Scandinavian Shipping Gazette.

Year-End Status of the U.S. Merchant Fleet

The number of vessels in our privately owned and operated fleet increased from about 700 at the end of 1946 to approximately 1,000 at the end of 1947. At the end of 1946 the privately owned fleet consisted of 284 tankers and 417 dry cargo vessels. By the end of 1947 the number of tankers had increased to 360 and dry cargo vessels to 643.

The number of Government owned vessels under GAA decreased from 980 at the end of 1946, to 230 at the end of 1947; government owned vessels under bareboat charter increased from 990 at the end of 1946 to a peak of 1454 in July and decreased to about 1,120 vessels at the end of 1947.

The number of World War II built vessels in our reserve fleet, excluding tugs, barges, cable ships and miscellaneous, decreased from 1,430 at the end of 1946 to 1,179 at the end of 1947, 1,117 of which were vessels of over 5,000 dwt. including 56 tankers sold but not delivered from layup at the year's end.

American-flag operators met with increasing foreign-flag competition during 1947 due to the increased size of the fleets of the foreign nations, both from their own construction and from purchase of war-built tonnage principally from U.S. and U.K. and Canada.

During the 1947 year foreign governments and/or nationals took title from the Maritime Commission to 782 dry cargo vessels and tankers increasing the number they have thus far acquired under the Ship Sales Act of 1946 to a total of 959 plus 14 other war-built military vessels converted to commercial types.

This increased foreign-flag competition is reflected in reduction of U.S. flag participation in our foreign trade during the year 1947. While our total foreign trade increased from a little over 10 million tons in January and February to almost 17 million tons in August for a monthly average for the eight months period of 13.7 million tons as against a monthly average of 10.1 million tons in 1946 U.S. flag participation in this trade decreased as indicated in the following table:

	Millions of Long Tons	% Carried by U.S. Flag
1947		
Jan.	10.3	60.5
Feb.	10.2	60.6
March	11.7	60.8
April	13.1	55.6
May	16.4	52.6
June	15.6	50.9
July	15.2	51.1
August	16.9	50.1
Monthly Average Jan.-Aug. 1947	13.7	55.3
Monthly Average Jan.-Aug. 1946	10.1	60.3

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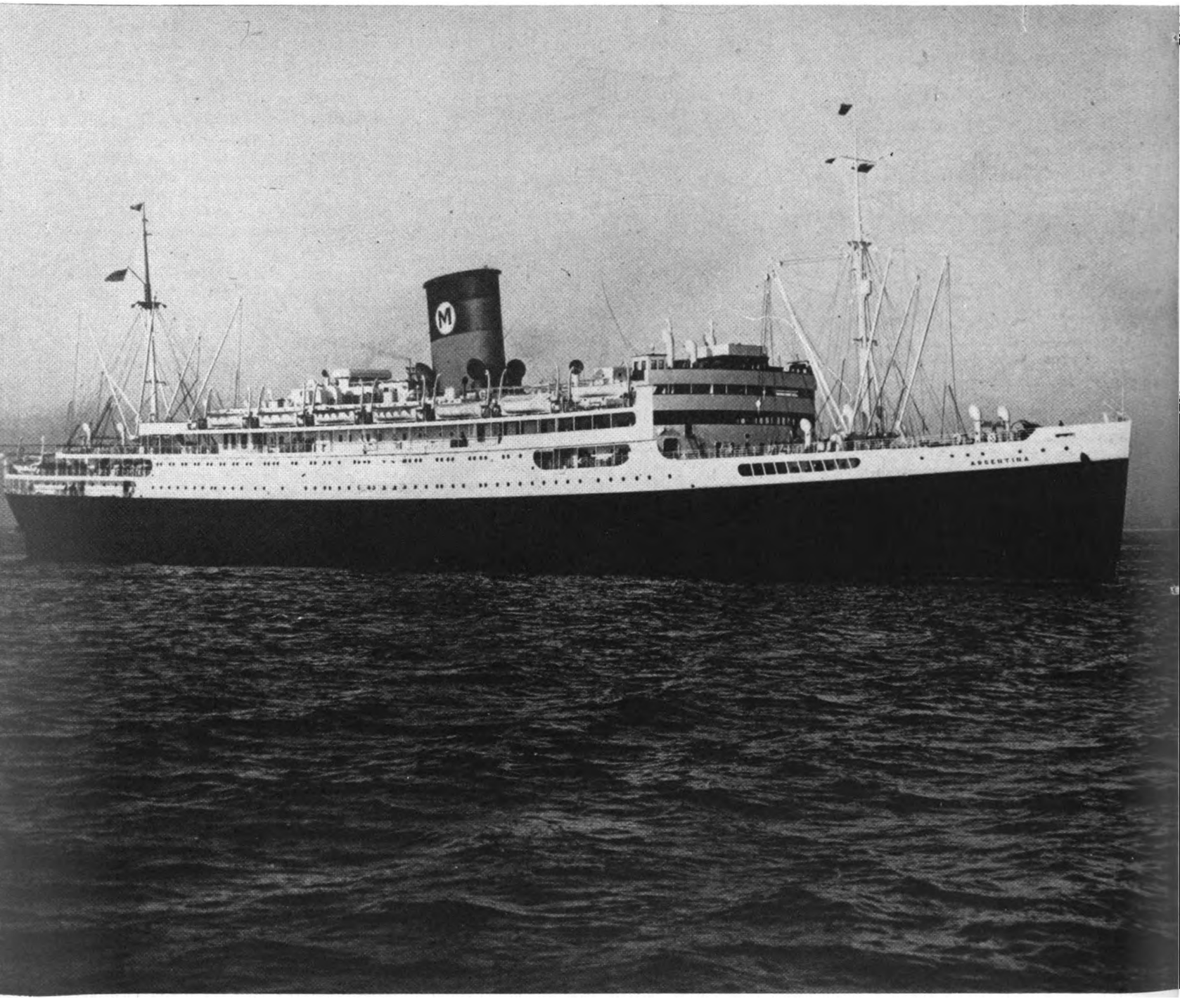

Courtesy of Moore-McCormack Lines

FOR SOUTH AMERICA . . .

A Good Neighbor Returns

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AMERICA'S SECOND LARGEST SHIP

S. S. ARGENTINA

Reconverted from wartime service by the Bethlehem Steel Company's Brooklyn Yard, the Moore-McCormack Liner comes through sea trials with a clean sweep.

As the Moore-McCormack liner ARGENTINA, of the "Good Neighbor Fleet," sailed from New York on January 15, she took up where she left off a few days after Pearl Harbor when she was drafted by the Army and started on the career of a troop carrier. Serving in this capacity until August 31, 1946, she steamed 335,906 miles and carried approximately 200,000 passengers.

Today, fully reconverted and overhauled at the Brooklyn 56th Street yard of Bethlehem Steel Company she is in every respect better than her former self. A number of improvements have been added to satisfy the latest demands for safety and to insure every convenience and comfort according to present standards of travel.

The ARGENTINA is the second largest liner in the American merchant marine to resume postwar service. She is one of three sister ships owned by the U. S. Maritime Commission and operated by Moore-McCormack, the other two being the BRAZIL and the URUGUAY. Although she was the last of the trio to be laid up for reconversion, she is the first to be completed. She entered the Brooklyn 56th Street Yard in November 1946 and work was started shortly after her arrival. However, due to the strike of the shipyard workers during the summer and early fall of last year work was suspended for about five months, making the actual working time about eight months. This is the largest peace-time reconversion job ever handled in New York harbor.

The contract for the conversion in general called for restoring the vessel to its prewar condition. This included removal of standee berths, messing facilities, and all defense features—gun foundations, armor, magazines, degaussing equipment, and many others added to the vessel by the Army. All public spaces were completely stripped and modern furniture and furnishings, murals and other decorations installed. The staterooms as well as officers' and crew's accommodations were likewise redecorated and equipped with new furnishings.

In addition the vessel was fire-proofed in accordance with the U. S. Coast Guard requirements, a procedure which meant the installation of incombustible ceilings, linings, fire screen bulkheads, new steel stairways, adequate escapes, an extensive sprinkler system, and many other features.

The ARGENTINA is a twin-screw vessel with turbo-electric drive of 18,000 horsepower, 613 feet long with 80 foot beam and a loaded draft of 34 feet. Her prewar speed was rated at 18½ knots although she actually exceeded that figure. The registered gross tonnage is 20,500, the displacement 33,000 tons. General cargo space is 450,000 cubic feet bale capacity, in 6 holds, with additional 95,000 cubic feet refrigerated space in 3 holds. After her conversion she now accommodates 359 passengers in first class and 160 in tourist, with a crew of 380 officers and men.

Reconversion Work

Soon after her arrival in the yard the ARGENTINA was placed in drydock for survey. The underwater bottom was sandblasted in four days, an exceptionally fast performance on a vessel of this size. Due to the extensive bottom work that turned up, she remained in drydock until January 20. A number of bottom plates were renewed, and several thousand rivets were renewed and/or welded as required.

The boilers and propulsion machinery and all pumps and auxiliaries were opened, inspected, and the necessary repairs performed. All cargo and service refrigeration spaces were completely gutted and renewed, using mineral wool insulation. Thousands of feet of electric wire and cable were torn out and the lighting system renewed in its entirety, modern indirect lighting being used wherever suitable. All interior communication systems were removed and renewed, and all electric motors on the ship were completely overhauled, cleaned and tested. The existing radio and radar were completely overhauled, also.

After a hydrostatic test, it was found necessary to replace the hot and cold salt-water system throughout the vessel. Existing lead soil lines were also removed and new welded steel soil lines installed. Sanitary fixtures, such as tubs, wash basins, and water closets were taken out and replaced with modern fixtures.

A new steel deck was installed in way of the galley on the C deck, and the ship's service refrigeration boxes on the D deck, as it was found, upon removing the covering in these areas, that the original steel decking was almost completely wasted. About 1,000 additional tons of block ballast was placed in No. 3 hold.

Included in the inspection of the vessel was the drilling of all steel decks, bulkheads and shell plating, to gauge their thickness. Another large item was the survey of the wood decking throughout the ship, a large part of which it was found necessary to replace. Oregon pine, 3 x 4 inches, with edge grain on the exposed surface, was used, and all decking was repaved and caulked preparatory to sanding to a smooth finish. Deck covering was also removed in all foyers and in

"ECONOMIC PATTERN OF SOUTH AMERICA" . . . this oil mural in the main lounge depicts the controversial ultra modern decorative theme of the ship.

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CHIEF HAFLIGER . . . CHIEF ENGINEER CHARLES HAFLIGER has served aboard the ARGENTINA since she was first commissioned in positions ranging from Sixth Engineer to Chief.

many of the public spaces and replaced with magnesite terrazo.

All drinking-water tanks were cleaned, scraped to bare metal and recoated. Doors of every description—weather doors, screen doors, and joiner doors were reconditioned or renewed, as found necessary. All windows were replaced with new modern types and existing airports reconditioned and equipped with scoops and insect screens throughout. Cargo-port doors and other openings sealed off by the Army to meet blackout requirements were restored to their original condition.

Redecoration and Refurnishing

Several features of the ARGENTINA will attract the attention of the traveling public. The main lounge, on the promenade deck, is large and formal. It has been named the Tango Room, as a tribute to the dance which all the world associates with Argentina. A multi-purpose room, the lounge lends itself flexibly to a number of uses, from comfortable lounging to dancing and other types of entertainment. A stage has been erected at one end. Behind the stage is a movie projection booth and film storage. Facing the stage is a large mural, a seascape by Loren MacIver entitled "Voyage". Large French windows open into the promenade deck on both sides. The old wood flooring has been removed and replaced with magnesite underlayment for a carpet, except at the center where a vinyl tile dance floor has been laid over the underlayment and where the carpet can be removed during dancing. White, warm grey, bluish grey and brown are the predominating colors in walls, rugs, furniture, and hangings.

CAPTAINS SIMMONS AND SADLER . . . CAPTAIN THOMAS SIMMONS (right) prewar, wartime, and postwar skipper of the ARGENTINA. CAPTAIN HARRY N. SADLER (left) is master of the BRAZIL which closely follows the ARGENTINA back into service.

THE MEN WHO DID THE JOB . . . of reconversion are pictured aboard the ARGENTINA during her trial run on December 30, 1947. Left to right they are: (1) JOHN BRANGAN, Senior Supervisor, Brooklyn 56th Street Yard, Bethlehem Steel Company, Shipbuilding Division; (2) CHARLES HAFLIGER, Chief Engineer of the ARGENTINA; (3) IVAN D. EBY, Superintendent Engineer, Moore-McCormack Lines, Inc., operators of the ship; (4) HOKE S. SMITH, General Superintendent, 56th Street Yard of Bethlehem Steel; (5) GEORGE BROWN, Yard Manager, Hoboken and Brooklyn 56th Street Yards, Bethlehem; (6) W. H. BEATTIE, Construction Representative, U.S. Maritime Commission; and (7) ARTHUR HILTEBRANT, General Manager, New York District, Bethlehem Steel Co., Shipbuilding Division.

The lounge and all other public spaces are equipped with an entertainment sound system for broadcasting radio programs and recorded music.

Immediately forward of the lounge is the library, named for a former chief officer of the ARGENTINA, Captain Henry Olin Billings, who died a hero's death when his ship was sunk off the coast of Africa in 1942. A bronze plaque has been placed in this room to indicate that Captain Billings has been chosen as a representative of the many young Americans carried by this vessel who never returned from the war. The plaque has the following inscription:

"To the men and women of the Armed Forces of the United States who went in this ship to meet the enemy in World War II and gave their lives that the ideals of their country might survive, this library is reverently dedicated."

The smoking room with adjoining writing room, aft of the lounge, is an H-shaped room, with a centrally located bar. Pole trellises with growing plants are placed on each side of the banquette seats and tables facing the bar, to supplement the intimate quality of the room with one of freshness. A mural of Eric Mose on the wall above the seats and extending into the dome depicts the economic pattern of South America.

Located aft on the promenade deck is the veranda cafe, known as the Mar Del Plata Club, and named for the famous watering resort near Buenos Aires, one of the most beautiful places of its kind in South America.

The large outdoor swimming pool, immediately aft of the veranda cafe, has been completely refinished with an attractive lining of blue tile and with underwater lighting and overhead flood lights for night swimming.

Both the first class and the tourist dining rooms are on the C deck, separated by galley and pantries and by a large,

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roomy emergency escape within easy access of the entire area, providing an escape up to the promenade deck.

The two dining rooms extend the full width of the ship, and both have a central dome with special lighting arrangement. In First Class this is an egg-crate construction similar to that in the main lounge, in tourist class an indirect lighting effect. Flush-mounted ceiling lights are used on the outboard sides. Oak tables on metal pedestals are used in both dining rooms, and are arranged for from two to fourteen persons in first class, and from two to eight in tourist. The two dining rooms will seat 300 and 166 persons, respectively.

Both dining rooms are air-conditioned, and, like all other public spaces on the ship, they have been fitted with soundproof ceilings.

Staterooms Renewed

Practically all of the equipment in galley and pantries is new—electric ranges and ovens, steam tables, coffee urns, refrigerators and all-metal dressers and sinks with stainless steel tops. New nonskid tile decking has been laid throughout the entire area. Individual dining rooms for officers and concessionaires are also located in this space.

Mess rooms and galley for the crew are forward on the B deck. Special service pantries are provided on all decks where public spaces are located.

The tourist lounge and smoking room are aft on B deck. Decorations in the smoking room include a painting "Sea Image", by Theodoros Stamos. A swimming pool for this class is arranged in upper section of No. 6 hatch way.

First class staterooms are on the A and B deck and are arranged for occupancy by two, three, or four persons per room. Except in a few cases where two adjoining rooms share bathroom and toilet facilities all have private bath, shower or tub, the latter predominating. All staterooms in both classes, and also those of the crew, are outside rooms, and each room is equipped with an oscillating wall fan. The rooms are designed to provide maximum comfort and convenience. Spaciousness is attained by the use of low beds, widely separated to effect as little interference as possible where strangers share rooms. All beds have inner-spring mattresses. In a number of rooms an extra bed of the Pullman type has been added. The type of furniture used, and its arrangement, are aimed at creating a sitting room lounge effect. Color schemes have been selected that suggest coolness and comfort in the tropical atmosphere of the Southern runs.

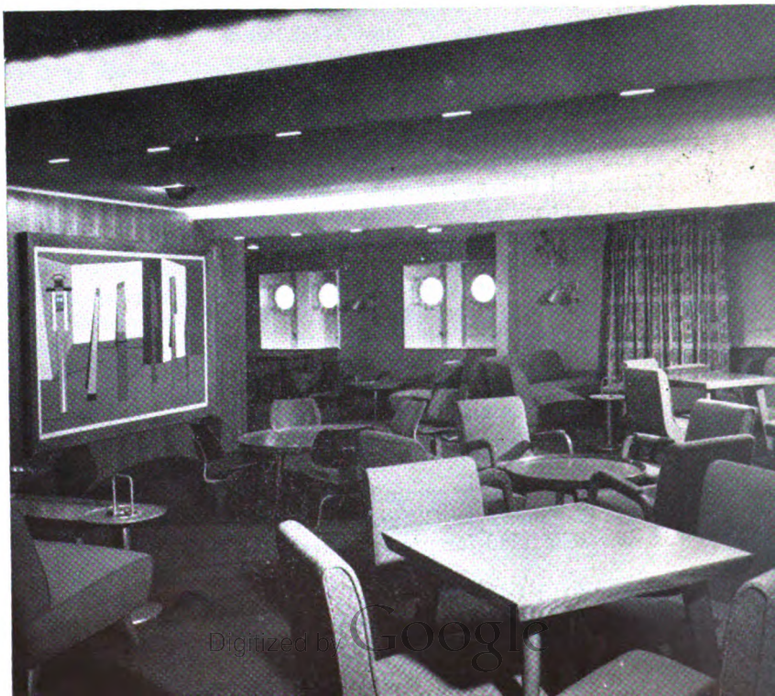
Two deluxe suites are arranged on the A deck. These consist of bedroom, bath, a sitting room opening upon the main lobby, and an outside veranda. In addition to these suites, a few of the regular staterooms may be combined into bedroom-living room suites if desired.

The tourist staterooms, all on the C deck, are arranged for occupancy by two to four passengers. They have beds of

(Continued on Page 55)

THE TANGO ROOM . . . is the ship's main lounge, named after the popular dance step of the Argentine. Extra height and skylight make this room light and airy for tropical cruising.

FIRST CLASS STATEROOM . . . strives for spaciousness and comfort through a sittingroom-lounge effect. Press and wire-service men in the picture were covering the trial run.



ENIGMA OF JOY . . . is the name given to the mural hanging in the cabin-class lounge. Despite the dubious "joyfulness" which passengers might derive from the painting, this is one of the most pleasant and comfortable rooms aboard the ship.

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WASHINGTON Reporter

By The LOG's Own Correspondents

Maritime Commission Will Oppose Ship Transfers Under Marshall Plan

Although the Maritime Commission has officially made no comment on the shipping provisions of the Marshall Plan, it is reliably reported that when asked by Congressional Committees for its views, it will take a surprisingly strong stand against any transfer of ships, by sale or charter, to the Marshall Nations. A communication between the Maritime Commission and the State Department registered the Commission's disapproval of the plan. However, Commission sources predict that the agency will "bitterly oppose" any transfers unanimously.

Commissioner Raymond S. McKeough, vice chairman of the Commission, advised Senator Magnuson of Washington that the Commission was disturbed over the prospect that U. S. flag ships might not get a fair proportion of the transportation of cargoes under the ERP.

In this respect, however, Senators Vandenberg, Michigan, and White, Maine have "guaranteed" the shipping industry that they will write into any legislation pertaining to the Marshall Plan a provision specifically requiring a certain portion of the long-term aid to be exported in U. S. flag ships. This guarantee was made as a swap for the industry withdrawing its objections to the interim aid bill. The Senators also promised that none of the interim aid money will be used for purchase of ships or for payment of vessels already purchased under the ships sales act.

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St. Lawrence Seaway Bill Seen Certain of Passage

Despite the strong opposition to the Great Lakes-St. Lawrence Seaway project, the bill is seen by most Washington observers as being "sure" of passage early in this session of Congress.

The Senate Foreign Relations Committee reported S. J. Res. 111 favorably to the Senate. Senators Lodge, Connally, White, and George issued a minority report in opposition to the bill, maintaining that the project would be vulnerable to air attack and that the proposed 27-foot channel could not be navigated by many of the American seagoing vessels. Most U. S. shipping and allied interests have opposed the bill on the grounds that it gives foreign tonnage a competitive advantage over American ships, since this country has very few shallow draft vessels.

The bill has yet to get under way in the House Public Works Committee where it is now scheduled for prompt attention.

Bradley Introduces New Seamen's Bill

Representative Willis W. Bradley of California has introduced into the House a bill (H.R. 4834) entitled "Merchant Seamen's Wartime Service Act" which would provide aid for those who served actively in the U. S. Merchant Marine during World War II. This bill is considerably modified from previous bills covering war service of seamen in that it provides only for vocational rehabilitation, disability and death benefits, and the service requirements are more stringent. To qualify under this bill a seaman must have been aboard ship. (H.R. 476 and S.429 included enrollees in the U. S. Maritime Service or enrollees or students in any maritime school or institution.)

Certificates of maritime wartime service would be issued by the Maritime Commission if application is made within year following date of enactment and if service was of at least six months duration at sea. Service also must be substantially continuous by serving not less than nine months in each twelve month period, and if such service was terminated not at the individual's own misconduct.

A wartime service seaman who has a certificate of maritime wartime service, or his dependents, would be made eligible under the bill for disability and death benefits provided by the U. S. Employees Compensation Act of September 7, 1916, as amended. Such a seaman would also be eligible for vocational rehabilitation services provided under the Vocational Rehabilitation Act of 1920, as amended.

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Bills Authorize Coast Guard To Operate Foreign Aids To Navigation

Companion bills introduced into the Senate by Senator Wallace H. White, Jr., Chairman of the Senate Interstate and Foreign Commerce Committee, (S. 1853) and into the House by Congressman Alvin F. Weichel, Chairman of the House Committee on the Merchant Marine and Fisheries, (H.R. 4796) would authorize the Coast Guard to establish, maintain, and operate within the United States, its Territories and possessions, and beyond the territorial jurisdiction of the United States at places where naval or military bases of the U.S. are or may be located, and elsewhere.

The bills provide for the following:

1. Aids to maritime navigation required to serve the needs of the armed forces or the commerce of the U.S.

2. Aids to air navigation required to serve the armed forces as may be requested by the Secretaries of the Departments within the National Defense Establishment.

3. Loran stations for military forces, air and sea commerce of the U.S.

None of these aids to navigation would be located within the jurisdiction of a foreign country without that country's consent.

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Munitions Board Studying Reserve Merchant Fleet

The Munitions Board of the National Defense Establishment is now studying surplus merchant ships as a national defense asset. The shipping industry is cooperating with the Board in this study, which is being made for the purpose of determining to what extent we can afford to deplete our reserve fleets through foreign sale and transfer, without damaging the national defense requirements of the United States.

The industry is vigorously opposing transfer of any more U.S. warbuilt ships to foreign nations or nationals, partially on the basis of weakening our defense reserve, and partially on the basis of endangering the nation's security through elimination of an active fleet able to compete with foreign countries.

It is expected that the findings of the Munitions Board on the matter of a merchant marine will strongly substantiate the shipping industry's views.

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Joint Committee Adopts Policy Of "Strictly Consultative"

The Joint Committee of the Merchant Marine was greatly embarrassed by the press reports of one of its meetings, and as a result it was necessary to revamp the program and have it clearly understood that the body was merely "consultative" and would not take a "stand" on anything.

The Joint Committee, which is comprised of all segments of maritime industry, including labor, management and government is headed by Stephen C. Manning, Jr., special assistant to the Maritime Commission, who was reelected to a six month term in January. The daily press erroneously carried a story that the Committee had gone on record as being opposed to the shipping provisions of the Marshall Plan. This report resulted in the clarification of policy, since most of the voting members of the Joint Committee were not empowered to commit their organizations to any particular stand on any particular subject.

The Committee will, in the future, be clearly for the purpose of getting representatives from the various branches of the maritime industry together for informal discussion of their problems. This is viewed as an extremely important function since it provides a chance for labor, management and Government to get together on a friendly basis for discussion.

(Continued on Page 54)

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CHAIRMAN WEICHEL SAYS . . .

The following questions were put to Congressman Alvin Weichel (R), Ohio, Chairman of the House Committee on Merchant Marine and Fisheries, by the Editor of The LOG in a personal interview. Here are his answers:

1. What do you think of the Report of the President's Advisory Committee on the Merchant Marine?

A. Worthless. It showed the fact that the Maritime Commission was not competent. The President appointed the Maritime Commissioners. No matter how little they know, they have at least been exposed to merchant marine matters. By calling in five men who have nothing to do with the merchant marine he is showing he has no confidence in the men he appointed to the Commission. The report is the product of men who know nothing about the merchant marine.

2. The President's Committee's Report recommended forty-six liners be constructed. What do you propose to do about them?

A. Nothing. I have no jurisdiction over that. That is a matter for the Maritime Commission, the Bureau of the Budget, and the Appropriations Committees of Congress. This is a legislative committee.

3. In practice, does the Appropriations Committee consult with you in any way before acting on appropriations for merchant marine matters?

A. No. That is their business.

4. Then the construction of ships is strictly a matter between the Budget Bureau and the Appropriations Committee?

A. Yes. This is a legislative Committee.

5. How can it be made a matter for your Committee?

A. The merchant marine can build all the ships it wants. There's no limit on the number of ships they can build. Let the companies put up the money.

6. What do you think of the shipping aspects of the Marshall Plan?

A. This is a legislative committee. We have nothing to do with that.

7. If the matter of transferring ships to the Marshall Nations is opposed by the shipping interests, will your Committee hold hearings on it?

A. That's a matter for the spoaker of the House. If he refers the matter to this Committee we will hold hearings on it.

8. If the matter of subsidy comes before Congress, requiring amendment of the 1936 Act, will your Committee have jurisdiction over it?

A. Yes.

9. What is your idea on subsidy?

A. If anyone gets a subsidy everyone should get it. The subsidized companies took $600,000,000 out of the Treasury during the war through tax exemption. Why should twelve companies get it? Why shouldn't all of the companies get it?

10. Are you planning to introduce legislation making the tax exemption provisions of the 1936 Act applicable to all companies, subsidized and non-subsidized?

A. No.

11. The President's Advisory Committee on the Merchant Marine Report advocates a flat fifty percent construction subsidy. Are you in favor of that?

A. No. The Maritime Commission has the authority now to grant subsidies based upon foreign costs. If the differential is only 25 percent why should we give the companies fifty percent

12. Does your Committee have any plan or program for the Merchant Marine?

A. No. This is a legislative Committee. We will hold hearings. If something comes up and is referred to us, we'll hold hearings.

13. Then you have no program of legislation for the Merchant Marine?

A. No. Not unless they change the law. This is a legislative Committee.

Congressman Alvin Weichel

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DISTRIBUTION OF WORLD

TANKER FLEETS

With the present acute shortage of tankers in world trades, here is an analysis of the world distribution.

By HAROLD M. WICK

The accompanying table No. 1 provides a comparison of the prewar (September 1, 1939) and the postwar (September 30, 1947) tanker fleets existing under each national flag in the world. Further changes in the current status of these individual fleets will take place as additional sales are consummated by the Maritime Commission of warbuilt tankers, under the terms of the Merchant Ship Sales Act of 1946, and sales and/or transfers of tankers privately owned, together with the completion of new tankers now in the process of construction in the various shipyards of the world. The total under the American flag especially will show a decline from the high of 960 of 8,301,430 gross tons and 13,256,500 deadweight tons reached early in 1946.

It will be noted from the table that there now exist in the world 264 more merchant tankers than were in operation before the war. Also, that the gross tonnage is greater by 3,520,391 tons, and the deadweight tonnage by 5,847,900 tons. These figures, of course, exclude tankers owned by the military services.

The average unit size and capacity of the postwar world tanker fleet is considerably greater than that of the prewar fleet. This is, of course, due to the war emergency tanker building program of the Maritime Commission and, also, to the fact that a large number of the world's prewar tankers, which were of smaller unit capacity, were destroyed during the war. In addition to the building in Swedish, Canadian and British shipyards during the war, the Maritime Commission produced 661 seagoing tankers and 90 smaller coastal types. Of these, 19 were lost during the war or have been sold for scrap, due to being badly damaged, and a number have been sold to the Navy.

The average deadweight tonnage of the current world tanker fleet, including only vessels of 1,000 gross tons and over, is 11,753 tons, while the average of the prewar fleet was 10,138 tons. This is an increase of 15 percent. The average size, as measured by gross tonnage, is now 7,640 tons, which compares to 6,755 tons for the prewar fleet, an increase of 12 percent.

The average speed of the world tanker fleet has also increased somewhat, as 551 of the tankers built by the Maritime Commission and now in commercial service have sea speeds of over 14 knots. Some of the tankers constructed in foreign shipyards during and after the war have greater speed than was heretofore normally adopted for this type of vessel. The average speed of the entire prewar tanker fleet was around 11 knots.

New Tanker Construction

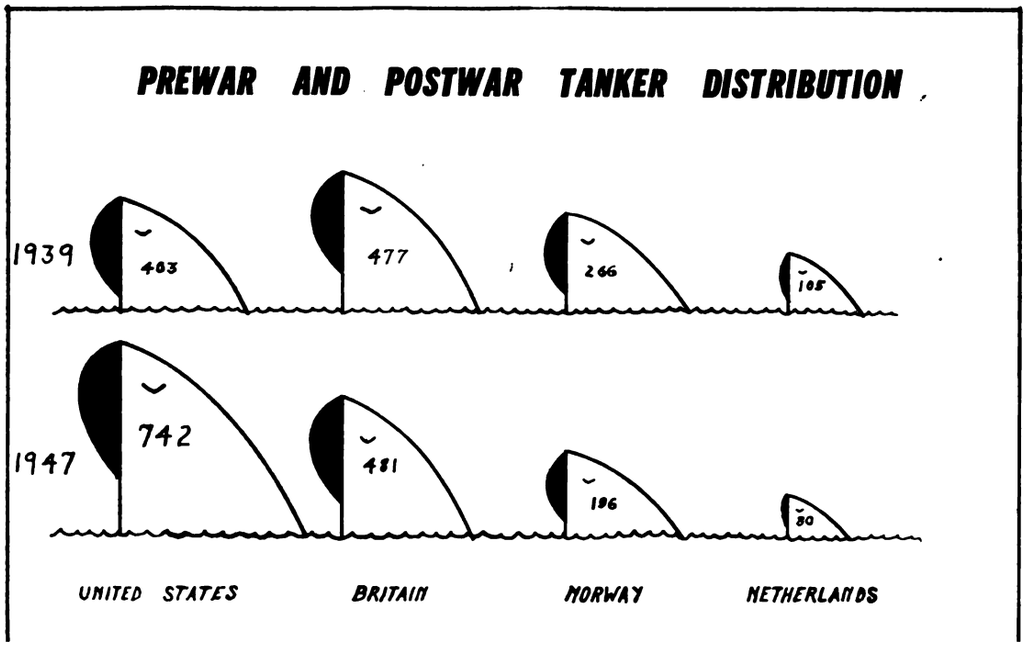
The world supply of tanker tonnage will be further augmented during the next few years by the completion of new vessels. From Table No. 2 it will be noted that 78 vessels are now actually in the process of construction in the various shipyards of the world, principally in Great Britain. Additional contracts have been placed but actual construction has not started as yet. These will add to the current world fleet approximately 1,100,000 deadweight tons and 703,271 gross tons. The average gross tonnage of the 78 tank ships now being built is 9,016 tons, which is considerably larger than the average of 7,640 tons of the present world tanker fleet. Practically all of these new tankers will be of 15,000 deadweight tons and over.

Diesel propulsion has been adopted for the great majority of these new tankers, 67 of which will have internal combustion propelling machinery, while only 11 will utilize steam driven main engines. The average tonnage of the new Diesel propelled tankers will be much greater than that of the steam driven ships, the former averaging 9,288 gross tons and the latter 7,357 gross tons.

About 57 percent of the new tankers and 56 percent of the tonnage is being constructed in Great Britain. Following the example set in the United States during the war and by the National Bulk Carriers since the end of the war, other nations are now building some very large carrying capacity tankers, a number of which will have a deadweight tonnage of approximately 25,000 tons. None of these ships, however, will exceed in size and capacity the 30,000 deadweight ton tanker now being built by the Welding Shipyards for the National Bulk Carriers. It is understood a sister ship will be started as soon as the one on the ways has been launched. The Sun Shipbuilding and Dry Dock Company has also developed plans for a slightly smaller tanker, about 600 feet long between perpendiculars, one of which is to be constructed for the Sun Oil Company and one for the Standard Oil Company, N.J. Contracts for additional vessels of this type have been in the process of negotiation for some time in the United States.

Comparison of American and Foreign Tankers

It will be noted from Table No. 1 that the tankers flying the American flag on September 30, 1947, totaled 742 of 6,642,580 gross tons and 10,593,700 deadweight tons. This is already a considerable decline from the aforementioned peak indicated in paragraph one, which at that time, 1946, represented 48 percent of the total world supply of tank ships by number, 55 percent of the gross and 57 percent of the deadweight tonnage. Prior to the war there existed under the American flag about 25 percent of the total number and tonnage of the tankers then in existence. The number now under the American flag represents 37 percent of the world supply of this type of vessel, 44 percent of the gross and 45 percent of the deadweight tonnage. These percentages will be further reduced by the end of 1947 due to the additional sales of tankers by the Maritime Commission to for-



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eign flag now authorized. The average tonnage of the current fleet is 8952 gross and 14,277 deadweight tons compared to 7083 gross and 11,109 deadweight tons for the prewar fleet.

There are, however, a considerable number of American owned new and old tankers flying the flag of Panama. The tanker fleet under the Panama flag at present, 134 vessels of 1,693,400 deadweight tons, is the fourth largest ranking group in the world, being exceeded only by the tankers under the American British and Norwegian flags. This number will be increased considerably by the end of 1947. More than 60 new warbuilt tankers have been transferred to Panama registry by the end of November, representing approximately 1,000,000 deadweight tons. Before the war there were but 54 tankers of 734,300 deadweight tons documented in Panama.

The second largest national tanker fleet in the world is that under the British flag, which, despite considerable war losses, is now slightly larger than the fleet operated in 1939 and totals 481 vessels of 4,864,700 deadweight tons. This fleet represents 24 percent of the total world supply and averages 7097 gross and 10,113 deadweight tons. This is about the same average size as the prewar British tanker fleet which was then the largest in the world, representing 28 percent of the total number afloat.

The third largest tanker fleet both prewar and postwar is under the Norwegian flag. However, the postwar Norwegian tanker fleet is considerably under the totals of the prewar fleet due to the great losses sustained during the war and the lack of new acquisitions during this time. The current fleet has 70 less units and about 600,000 less deadweight tons. Norwegian interests now control about 10 percent of the total tankers in existence compared to 15 percent prewar. Their tankers now average 12,851 deadweight tons, which is larger than the British average and approaches the American average, and represents an increase of 10 percent over the prewar average of 11,770 tons.

Thus 77 percent, or 1553, of the tankers existing in the world are now under four flags. This is a situation closely paralleling that existing prewar when four nations, the United States, Great Britain, Norway and Holland, controlled 73.5 percent, or 1251 of the 1700 tankers afloat.

The balance of the 1947 tanker fleet, 411, or 23 percent, is distributed under 28 flags, with The Netherlands owning 80, which comprises the fifth largest fleet.

Tank Ship Propelling Machinery

Table No. 3 discloses the trend in the type of propulsion machinery and fuel used in the postwar world tanker fleet and at two periods prewar, 1930 and 1939. It will be noted that in this sixteen year period the number and tonnage of tankers utilizing steam reciprocating propulsion machinery has declined consistently, showing a drop from 1930 to 1939 of 126 vessels and a further drop from 1939 to 1946 of 90 vessels. This was during an era when the world supply of tankers increased by 769 units.

In 1930 about 67 percent of the tankers afloat were propelled by steam reciprocating engines, this being reduced in 1939 to 44.5 percent, and to 30 percent in 1946. This decline is partly attributable to the many sinkings during the war and to the fact that in recent years few new tankers have been constructed employing this type of propulsion machinery. The tankers still in existence with this type of main engines are of the oldest age group, and represent a smaller average unit size than tankers propelled by other types of machinery. They average only about 5,500 gross tons and 8,500 deadweight tons, compared with 10,000 gross tons and 17,000 deadweight tons in the case of the turbo-electric drive tankers. From a tonnage standpoint, these vessels represent only 22 percent, or 5,138,700 tons, of the total deadweight of 23.234,600 tons, and but 23 percent, or 3,448,754 tons, of the total gross tonnage of 15,066,295 tons. It is doubtful whether this type of machinery will ever be employed in the future in the construction of any large tankers, although in some special purpose vessels of comparatively small size it might be deemed advisable.

Majority of Tankers Diesel Propelled

It will be noted from the Table that the trend toward the use of internal combustion propelling machinery in tankers was rather marked in the years before the war. This trend was of necessity interrupted during the war years when the demand was for speed in construction, and as large units of 6,000 to 10,000 brake horsepower did not lend themselves to high speed mass production, no such tankers were produced in the United States or Canada, and but few in Great Britain and Sweden in this period. While the Table indicates a decline from 1939 to 1946 of 42 in the total units employing Diesel propulsion, this was due to war and other losses. As the trend abroad now is to the use of Diesels for tanker propulsion, the future years should see a considerable increase in the total number of Diesel propelled tankers.

According to the Table, in 1930 about 25 percent of the tankers in existence, or 317, and 31 percent, or 2,307,329 gross tons, of the total tonnage were propelled by internal combustion engines. These vessels then averaged 7278 gross tons each. By the start of the war in Europe, or nine years later, the number of tankers employing this type of propelling machinery had more than doubled, totaling 741 of 5,091,327 gross tons, or more than 50 percent of the total number of 1556, and 53 percent of the total gross tonnage of 11,131,975 gross tons. The average gross tonnage had also increased, amounting to 7963 tons. Due to the war emergency shipbuilding program in the United States producing a great number of and prac-

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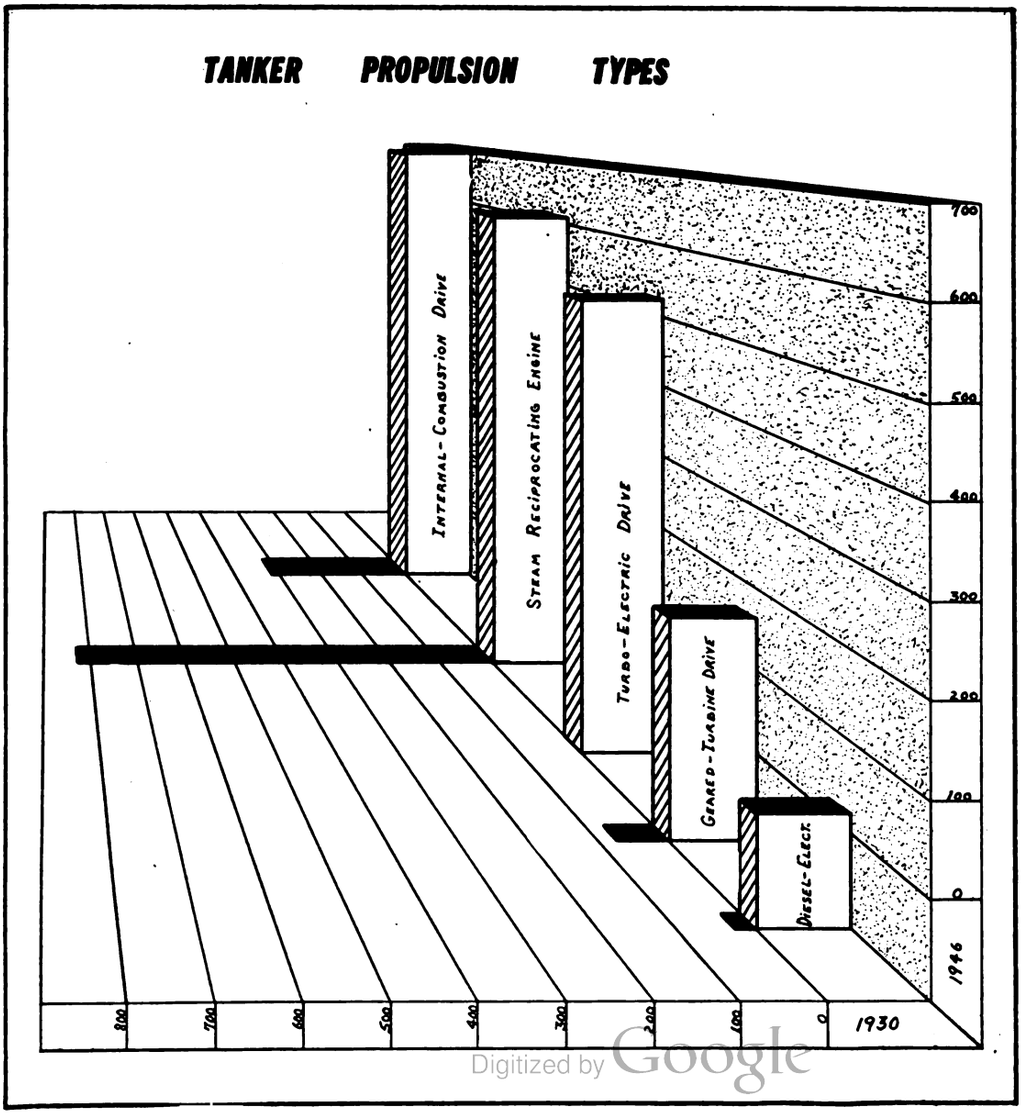

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YOU CAN EARN PROFITS WITH A

MODERN POWER PLANT

Here's how research can put dollars in your pocket through efficient power plant design.

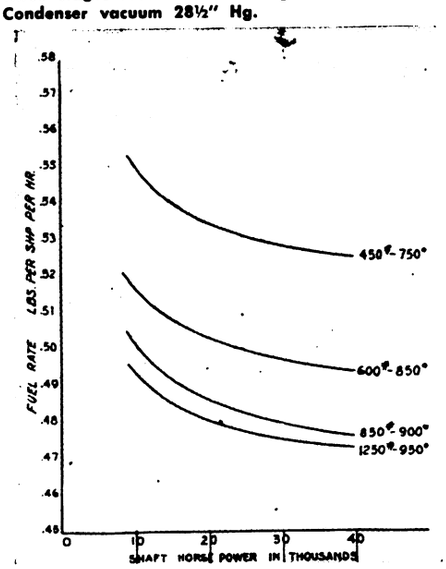
By A. W. WOODS
Asst. Chief of Engineering
Scientific and Electrical Section
U. S. Maritime Commission*

It is the purpose of this paper to present the salient features of a new vessel power plant design and the reasons or reasoning that led to the selection of the equipment specified. The machinery under discussion is that finally specified for a new cargo ship design designated the C3-S-DB3. None of these vessels have been built, so my discussion is unfortunately predicated on design studies.

The power plant finally specified is a geared steam turbine 12,500 SHP normal 13,750 SHP maximum with steam conditions of 850 pslg 900°F. at the superheater outlet. Single screw propulsion at 90 RPM. Most auxiliaries are motor driven and 3-400 KW turbine generators are provided.

The selection of a marine power plant depends upon a great many complex variables, not the least of which is the preference or prejudice of the prospective owner, his engineers or design agent. Sometimes the preference of an owner for some inefficient equipment has a sound background because of a particular requirement, but generally the prejudice or preference for some outmoded, inefficient design seems to have no basis. To avoid this type of prejudice, the Technical Bureau of the U. S. Maritime Commission has attempted, in the development of machinery designs recently, to evaluate the most popular types of equipment, cycles, etc., on a basis of yearly operating cost. We believe this is preferable to the return on investment type of evaluation, since it gives a clear unmistakable result in dollars and cents.

Figure 1.
FUEL RATE VS. SHAFT HORSEPOWER
ENGINE ROOM ONLY
Boiler Eff.=88%
Three stages feed water heating
Condenser vacuum 28½" Hg.



The system followed in these evaluations considers first cost of equipment, the annual carrying charges, such as depreciation, interest and insurance and the fuel, lubricating oil and water cost. Thus a total annual operating cost, less wages and maintenance, is obtained.

For most of the designs considered, the engine room crew would be the same, consequently we can neglect wages in these studies.

There has been no effort to incorporate an estimate for maintenance since investigators revealed wide fluctuations that appeared to depend on the source of the data. I believe maintenance is influenced by the skill of the operator, the maintenance program followed, the experience and knowledge of the manufacturer, etc. In view of this, it is felt that each operator can add his own maintenance based on experience.

An annual carrying charge of 9¾% is used in these studies. This is based on 5% depreciation, 6% insurance and 3½% interest. I have recently been advised by a large shipping line that they can obtain money at 1¾%. If this value is used, the annual carrying charge is reduced to 6⅞% with the consequent advantage to the higher efficiency, higher priced equipment.

Thermodynamics and Economics

In developing designs for passenger liners during the past several years, the U. S. Maritime Commission has studied power plants from 9,000 to 50,000 HP per shaft, both thermodynamically and economically. Since many of the prices used in the economic studies were originally based on 1941-45 prices, the economics had to be revised. The thermodynamics, of course, did not change.

In studying the steam conditions, the pressure was varied from 450 lbs. to 1250 lbs. and combined with temperatures ranging from 740 F. to 950 F. These studies were based on a simplified heat balance using 3 feed heaters, all electric auxiliaries and generator loads proportioned to reflect changes in power. The thermodynamic results of this investigation are shown in Fig. 1 and reflect what you would normally expect, i.e. the higher pressure and temperature plants are more efficient. Please note that these fuel rates are not intended to be all purpose attainable rates, but are merely relative rates obtained from a special simplified cycle for study.

*Presented before the Philadelphia Section of the Society of Naval Architects and Marine Engineers.

Fig. 2 shows the estimated cost of the major components of these power plants —that is the items that would be affected by changes in pressure and temperature. This cost figure includes Boilers, Turbines, Condensers, Generators, Feed Pumps and H.P. Heaters.

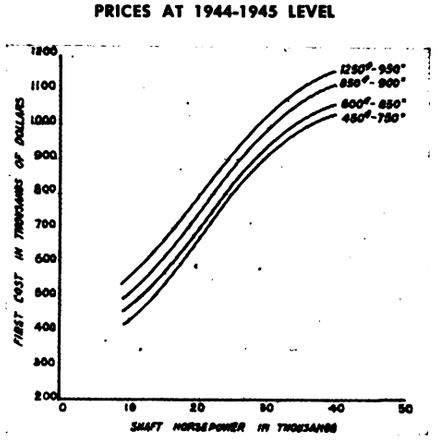
Fig. 3 shows the change in annual operating cost (based on oil at $1.25 per bbl.) for each cycle considered, using the 450 lbs.-750° cycle as a base.

The obvious economic selection shown in Fig. 3 is the 850 lbs.-900° cycle for all powers above 15,000 SHP per shaft. Above 25,000 SHP per shaft reheat cycles may be indicated but the available estimates need rechecking at today's price levels before a decision could be definitely made. Certainly if fuel prices continue to rise the higher efficiency reheat cycles must be reconsidered. However, a reheat installation would not be recommended for a 12,500 SHP installation in any case.

$19,000 Less Deficit

Considering the cycle indicated of 850 psi-900° F. we find considerable experience with these steam conditions in the utility field and some experience in the marine field at similar temperatures so acceptance of these steam conditions does not constitute a hazardous experiment. In this connection it is believed that the economic study is a clear indication of the limits of industry's knowledge and experience for it can be seen that where we go above pressures and temperatures that have been found general acceptance a sharp increase in first cost is indicated. Generally this increase is sufficient to overcome the higher efficiency and the annual operating cost is also higher. Thus the annual operating cost analysis gives us an additional barometer to use.

Figure 2.
FIRST COST OF MACHINERY VS.
SHAFT HORSEPOWER
INCLUDES ONLY THOSE ITEMS WHICH CHANGE
WITH HORSEPOWER
PRICES AT 1944-1945 LEVEL



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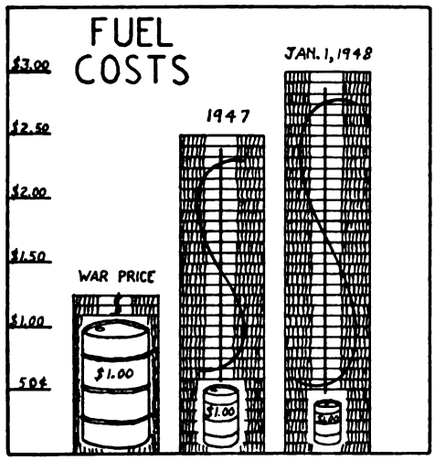


As previously mentioned, Fig. 3 was derived from machinery prices obtained in 1943 and 1944 and uses the war time fixed fuel price of $1.25 per bbl. The data was revised to reflect prices as of June 1, 1947 for the 13,000 SHP condition only. The three cycles 450 lbs.-750°, 600 lbs.-850° and 850 lbs.-900° were checked and the results plotted in Fig. 4 as annual operating cost vs. fuel oil price. The fuel price at which the various cycles break even is indicated. The savings are moderate but represent approximately $19,000 per year at today's oil price for the 850 lbs.-900° cycle. This is only about 5% of the annual cost, yet in bad times, how many cargo ship operators would settle for $19,000 a year profit or, should I say, $19,000 less deficit?

The latest price of oil that I have available is $2.54 (Nov. 1) per bbl. at New York. At this price Fig. 4 shows the 850-900 cycle to be $5,000 per year more economical than the 600 lbs.-850° and $19,000 per year better than the 450 lbs.-750° cycle. Based on these savings and feeling that oil prices will remain high, we selected the 850 lbs.-900° cycle for these vessels. Ample assurances have been obtained from the major machinery suppliers that they can furnish safe, low maintenance marine machinery at these steam conditions.

Economic Selection of Components

Just as the overall cycle selection is determined on an economic basis, so should each component be selected.

When considering the feed cycle, the studies indicated the advantages to be obtained for multiple stage heating. These studies included the cost of additional feed heaters and pipe, the additional boiler cost and the various associated problems that would be encountered. It was clearly indicated by these studies that it is economically sound to use four stages of feed water heating for all powers above 10,000. For this specific design the study indicated a saving of $1494 per year with oil at $1.92. The saving with oil at $2.54 would be $2335. Increased equipment cost is $11,054 for heater, boilers and condenser. While it is true that the feed temperatures resulting from four stages of heating complicates the boiler problem to some extent, it did not introduce any insurmountable problems. In fact the point that is most likely to be discussed is probably the addition of the air heater required to maintain the best boiler efficiency. While it is true in the past that gas air heaters have required some considerable maintenance, it is believed that these difficulties can be readily overcome through proper design. On those vessels experiencing air heater difficulties, provision had not been made for automatically bypassing the air heaters at low powers nor had adequate consideration been given to the number and location of soot blowers. It is believed that future installation will provide automatic bypassing of both the air and gas sides of the air heater at reduced powers and it has been further believed that additional soot blowers will be installed in air heaters with careful attention being paid to their location.

The study also considered the possibility of using three stages of feed heating with gas air heaters and it was found that this cycle increased the operating cost per year appreciably. Many other arrangements have been studied, the results of which show a similar trend.

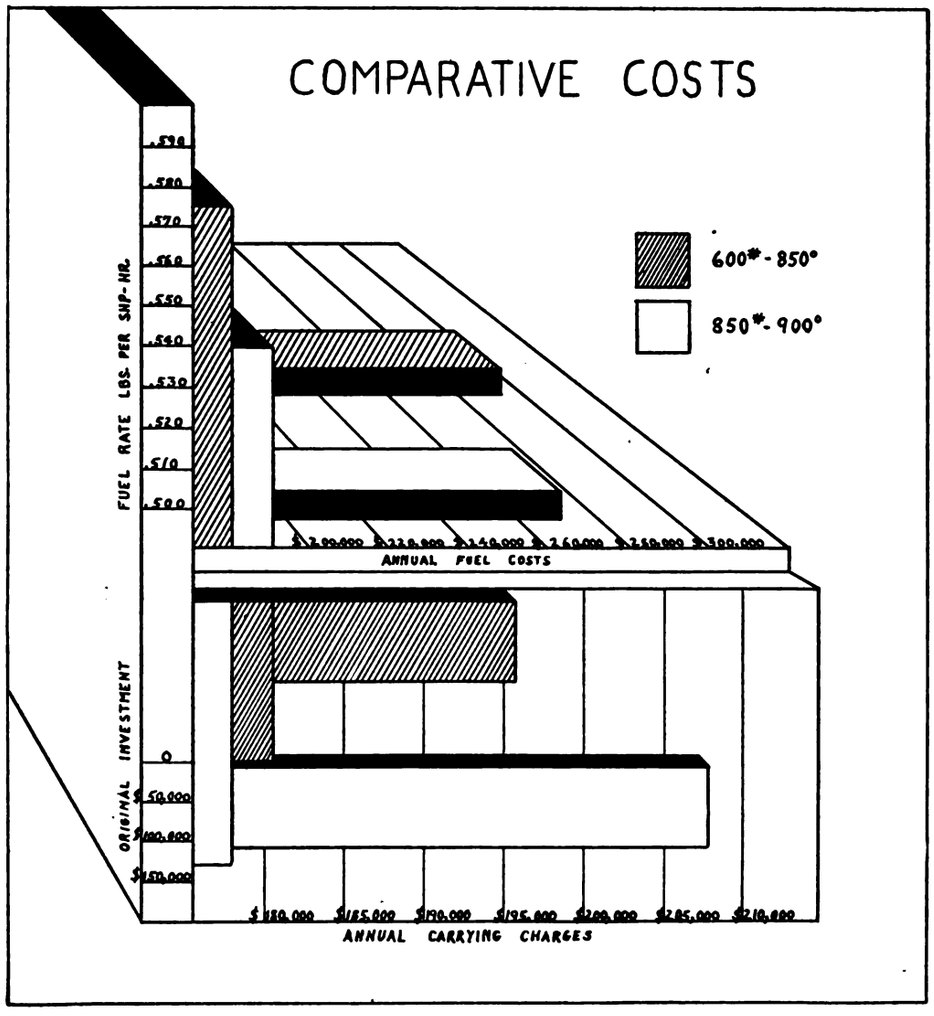
Unit Feed System Not for High Power

In considering the feed cycle, it has been found that the unit feed system which has found favor in the lower power ranges in the past does not lend itself to the application to the higher power ranges. First of all, if the centrifugal pump is used, the pump efficiency obtained with the unit feed system due to reduced capacity is adversely affected. Motor driven positive displacement pumps built to the size required are unusually costly and further, the duplication of feed heaters, feed pumps and feed piping necessary for this system greatly increases the capital investment so that it is extremely difficult to justify it economically. In fact, all the studies for all powers made of the unit feed system and the common feed system demonstrate that the common feed system offers the lowest operating cost.

Present Propulsion Turbines Okay for 850#-900° Cycle

The adoption of 850 lbs.-900° cycles does not introduce any new problems concerning the turbine and gear design. Considerable experience has been accumulated ashore in turbine designs for this pressure and temperature as well as for higher pressures and temperatures. This experience coupled with recent marine experience provides ample background on which to predict the requirements of the materials and design that will be used. As a matter of fact, blading materials will be the same with this cycle as they are with the 450 lbs.-750° cycle. Insofar as the rotors are concerned, the same material as is presently specified with the 600 lbs.-850° cycle is used.

Insofar as the astern element is con-



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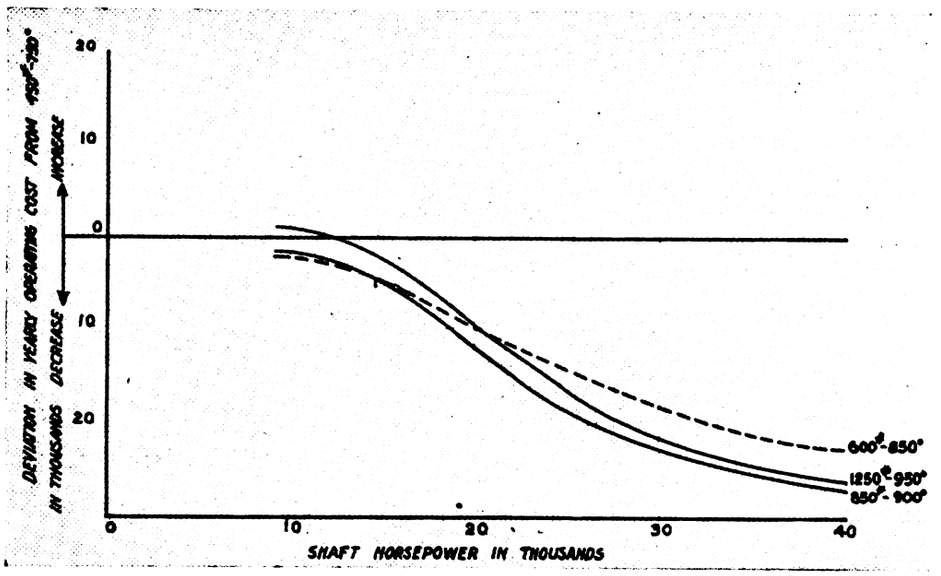

CHANGE IN YEARLY OPERATING COSTS USING 450#-750° AS BASE

Fuel oil at $1.25 per barrel

Fixed charges based on 1944-45 prices

cerned, sufficient experience has been accumulated in current designs to justify the prediction that no trouble will be encountered in this equipment. It has been established that the necessity of superheat control for the astern elements no longer exists since it has already been demonstrated that they were fully capable of taking the full ahead steam temperature during astern operation. It is necessary of course that proper provision for the astern vacuum depending upon the astern shaft speed be provided to secure trouble-free operation. However, this is just as true for any other cycle including 450 lbs.-750°. It is necessary to utilize high vacuum with high astern shaft speeds to avoid overheating in the ahead blading. For an astern shaft speed of 50 percent of the ahead speed, a vacuum of 26" will be satisfactory, while for an astern shaft speed of 70 percent of the ahead speed, a 27½" vacuum will be necessary. Accordingly, it is essential to possess full particulars regarding the propeller characteristics for astern operation in arriving at the vacuum necessary during astern operation.

Certain utility plants have experienced difficulty with high pressure and temperature cycles due to plugging of the turbine blading from silicate deposits. It has been established that this has resulted from the use of poor water and/or inadequate treatment. It is not a factor in marine design where make-up water is obtained from the evaporation of salt water.

No Problem With Reduction Gears

The steam cycle selected does not introduce any problems in connection with the reduction gears. In regard to gear design factors, there is a present tendency to increase the allowable loading in order to reduce space and cost. However, it is felt that any effort in this direction should be carefully considered since it directly affects maintenance which is extremely difficult to evaluate so that reductions in cost and space might materially increase the operating cost. Prior to the war, it was the U. S. Maritime Commission's practice to limit the tooth loading by using a K factor of 65. However, during the war, for production reasons, the Victory gears were designed with a K factor of 100 for the first reduction and 70 for the second reduction. Studies of this experience are presently in progress and the results indicate the possibilities of utilizing higher factors. Based on these results the DB3 Gears have been specified for a K factor of 75.

It has been the past practice to incorporate the thrust block in the reduction gear casing. This consideration should be very carefully studied on all future construction since there is considerable indication that in many cases it will be conducive to longitudinal vibration as well as to vibrations between the reduction gear housing and the turbine casing resulting in very short life for the flexible couplings. It is not possible to generalize the location of the thrust block except that it is generally not advisable to incorporate it in the reduction gear casing and each design must be carefully studied in respect to longitudinal vibration in order to arrive at the most advantageous location for the thrust block. Removing the thrust block from the gear casing in addition to eliminating vibration between the gear case and the turbine case permits a more rigid thrust foundation to be designed as well as providing discretionary selection of the critical frequency of the shafting for longitudinal vibration. In connection with the economics of gear revolutions, the gear cost is not a deterrent in the adoption of lower propeller revolutions.

Condensers

To this point, no mention has been made of the vacuum to be used in the steam cycle. This has been done deliberately for actually the optimum vacuum to be used is not so much a function of the pressure and temperature as it is a function of the sea water temperature. Strangely enough, leading turbine manufacturers do not place a premium in the selling price as a result of high vacuum so that the vacuum selected will be independent of the turbine costs. In order to arrive at the optimum vacuum, it is necessary that the average sea water temperatures for the routes to be traveled be known monthly and yearly. From this, the design sea water temperature can be selected. With this sea water temperature, economic studies have been made involving condenser cost, pumping cost, fuel cost, interest, insurance, etc., so that the optimum vacuum may be selected. Results of these studies indicate that for 70° sea water temperature, 28¼"; for 80° sea water temperature, 28".

Effect of Boiler Efficiency on Operating Costs

The first question that arises in connection with boiler design concerns the maximum efficiency to be required. In order to evaluate this factor, studies were made of the economics to determine the effect of boiler efficiency on the overall operating cost. For practical considerations it was considered necessary to restrict the maximum boiler efficiency to 89 per cent since the flue gas temperature with high efficiencies is below the dew point which would result in unsatisfactory operation. The studies indicated that up to 89 per cent the annual operating cost was still decreasing with boiler efficiency. This indicates that the selection of boiler efficiency should be controlled by the flue gas temperature. Investigation indicated that the lower limit of flue gas temperature should be 300° with a 10.75 per cent hydrogen oil and 1½ per cent R and U losses. This will correspond to better than 88 per cent efficiency.

Having established the most economical boiler efficiency, the next problem lies with the manner in which this is obtained. In view of the fact that the previous studies indicated the desirability of using four stages of feed water heating, it is generally indicated that both economizers and air heaters should be used. It is appreciated that this is a controversial subject in which there are strong advocates to the all economizer boiler and equally strong advocates to the all air heater boiler. It is felt that both of these groups are sincere in their opinions, but it also felt that the experience which has formed these opinions has also evolved satisfactory cures for the problems that had been encountered. The true answer lies in the adequate design of both air heaters and economizer. Careful study of this problem has indicated the desirability of using both the air heater and economizer in marine boilers. Basically, both the economizer and air heater have been criticized, due to corrosion and fires. There have been serious corrosion problems that have occured with the economizers as a result of improperly treated water and there have been fires occurring in economizers

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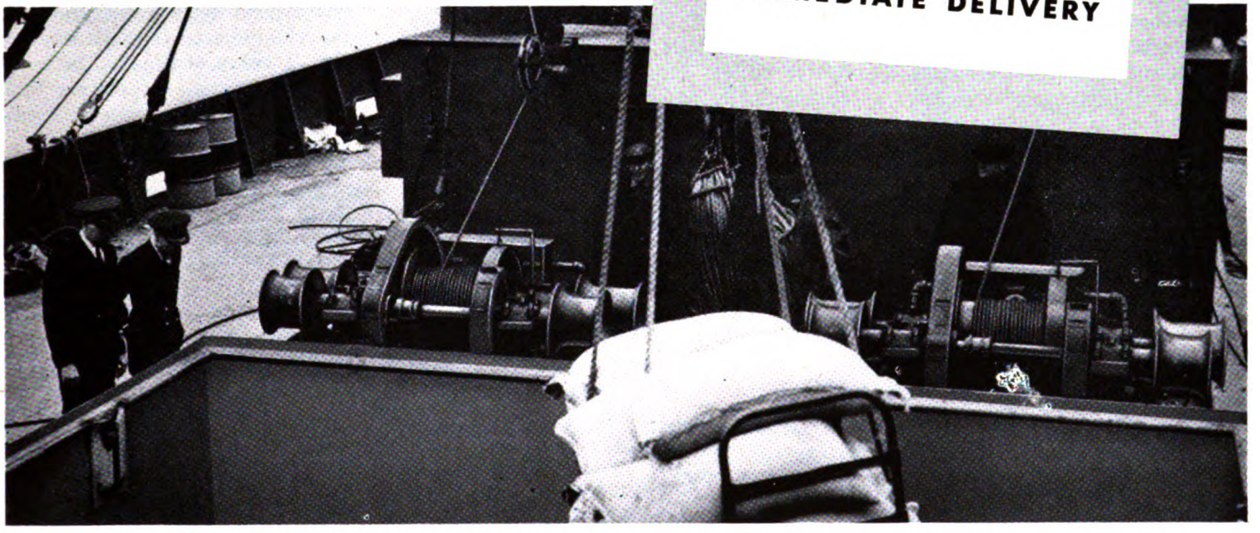

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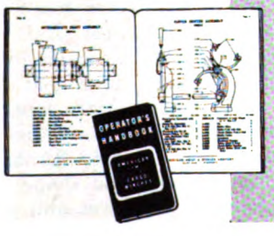

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as a result of operation at low loads. So also with the air heaters, fires have occurred when operating in port or immediately upon lighting up and too there has been corrosion which has been attributed to the low load operation when the temperature of the flue gas has been reduced below the dew point. In the combination economizer air heater boiler, the economizer surface is so located in the gas path that likelihood of economizer fires are extremely remote. The use of deaerating feed water heaters eliminates the likelihood of oxygen corrosion. It is fairly well established that if the air heated *gas* side is bypassed at low powers, the air heater fires will be eliminated and air heater corrosion will be materially reduced. This is not difficult in accomplishment; in fact, the operation of this bypass can be made automatic by combining it with the present combustion control thus eliminating any judgment factor.

For the sake of argument, the economic studies made of the air heater in this connection have included a maintenance cost based on retubing 1/3 of the air heaters every five years. (There is no reason to expect such a high replacement factor if the air heaters are bypassed on the gas side.) This replacement factor was obtained through a consultation with several boiler manufacturers and ship operators and is accepted as being on the pessimistic side. Accepting this fact, it is still more economical to use four stages of feed heating with a gas air heater than to use either two or three stages of feed heating with a steam air heater. The saving in operating cost per year is sufficiently high to provide for the retubing of the air heater in five year periods and still offer a considerable reduction in annual operating cost.

Desuperheating Control Most Practical

In regard to superheat control, the writer is decidedly of the opinion that divided furnace type boilers are to be avoided for they materially complicate the boiler problem, require unusually skilled operators and offer but little advantage in the Merchant Marine field since the control of superheat on the astern turbine is not critical for turbines up to 900°. The writer appreciates the necessity of some form of superheat control but does not consider that the divided furnace boiler offers a control acceptable to the Merchant field. From the studies made by the writer it would appear that the most efficient and most practical control for the Merchant boiler would be a control involving desuperheating. This type of control is completely automatic and in no way affects the operation of the boiler or generation of steam and it will prevent surges in temperature that cannot be prevented by a divided furnace. The Navy has operated a vessel for slightly over one year with a desuperheated type control which has proven eminently satisfactory. One particular type of desuperheating control that appears attractive at the present moment involves the admission of condensate or feed water to coils in the superheater header. The flow of water is controlled by a thermostatic element in the superheater outlet. This control will function automatically at any time that the temperature exceeds a pre-determined value, thus protecting the superheater as well as the turbine and piping. The control, furthermore, is of such nature that an appreciable range of temperatures is available for instantaneous selection. This type of control has found favor in several utility power plant installations ashore. Another type of control, which has been used in the Marine service very successfully for the same temperature range also appears to possess considerable merit. This type involves bypassing steam from an intermediate pass of the superheater back to a boiler drum desuperheater. This bypass valve can also be actuated automatically by a thermostatic element. It is believed that with this type of control principle, the design and operation of the boiler can be greatly simplified and that unusual margins need not be provided in the selection of materials since this control will automatically maintain a definite set temperature independent of boiler operation.

For vessels whose schedule does not require operation over a wide range of power for appreciable time (such as 50 per cent power for 50 per cent of the time), it is believed that the boilers should be designed to obtain design temperature at normal power required by the schedules. Protection from normal power to full power and to overload power should be obtained through the use of a desuperheating type superheat control.

Automatic Burners

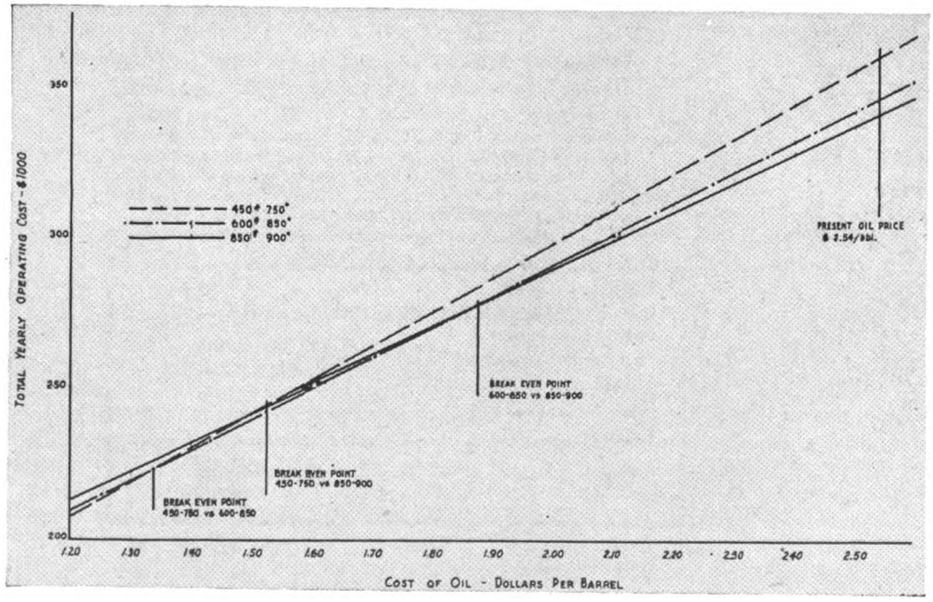
The present mechanical burner both wide range and standard type has rendered good service and the performance reports indicate that satisfactory operation is being obtained. On new installations, it is true of course that adjustments are many times necessary before proper combustion is obtained but once having been set, the operation has proven satisfactory. However, considerable interest has been shown by certain operators in burners possessing wider range than is now available. One of the developments along this line has been the return to steam atomization. After initial difficulties with the first installation, the burners are now giving acceptable performance and possess appreciably wider range with a single tip than mechanical burners. The flame is adjustable to any furnace shape. The burner may be operated at lower temperatures and pressures and possesses large oil passages which tend to eliminate plugging. However, they require the use of considerable fresh water and many people feel that its advantages are not of sufficient magnitude to overcome this disadvantage since normal operation at sea does not entail large load changes for the average vessel. Another burner that has received attention of late is the rotary cup burner. Development of this type burner has been limited in this country to comparatively small self-contained units for natural draft installations. However, it has been found that the Germans have developed a rotary burner of unusually high capacity—approximately 5500 lbs. of oil per burner. This burner is also quite flexible in regard to range and flame shape and permits low oil temperatures and pressures. The high capacity of this burner coupled with wide range is attractive since it will

(Continued on Page 55)

Figure 4.

COST OF OIL VS. TOTAL YEARLY OPERATING COST
13,000 SHP

Based on machinery cost as of June 1, 1947



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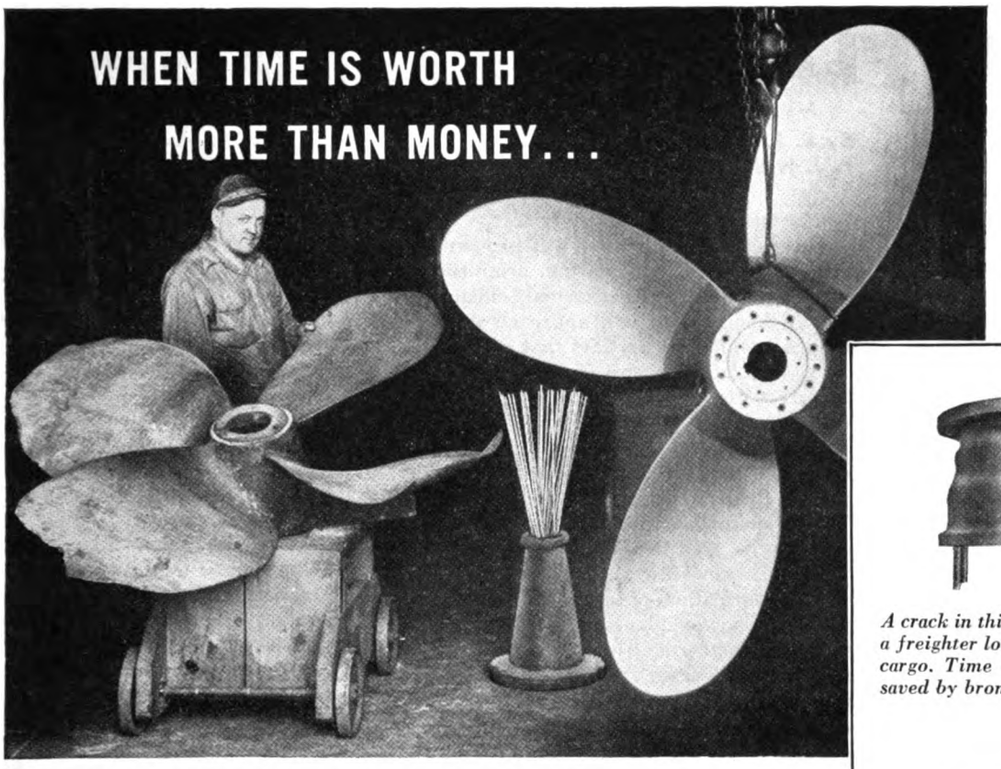

At the Tebo Plant of the Sullivan Dry Dock and Repair Corporation in Brooklyn, damaged manganese bronze propellers are speedily built up and reconditioned by oxy-acetylene welding with Tobin Bronze. At left, the damaged propeller, at right, welded and ready for service after grinding, realignment, repitching and balancing.*

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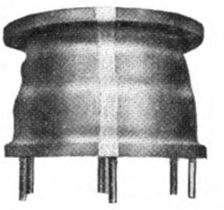

A crack in this engine casting halted a freighter loaded with a perishable cargo. Time and cargo were both saved by bronze welding.

Replacement was out of the question when this cast iron valve body cracked. Again, a bad situation was saved by oxy-acetylene welding with Tobin Bronze.

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LUBRICATION OF MAIN PROPULSION POWER PLANTS ABOARD SHIP

By E. F. GRIEP* and F. J. HANLY**

The main propulsion power plants aboard ship fall, in general, into four distinct types. These types are as follows:

1. Reciprocating steam engines
2. Steam turbines
3. Diesel engines
4. Gas turbines

Of the four above-mentioned power plants, the first, reciprocating steam engines, is rapidly being displaced by other types of power plants, particularly in new construction. However, due to the simplicity of the units, their operating flexibility and to the fact that so many engineers are familiar with their operation, the reciprocating steam engine is still very popular and will be with us for some time to come.

The steam turbine has been developed to a high degree and has many advantages as the main propulsion power plant aboard the ship. When compared with steam reciprocating engines, turbines require less engine room space and are lighter in weight. From a lubrication standpoint they do not contaminate the exhaust steam with oil and use far less lubricant. With the advent of higher steam pressures and temperatures, the use of this type of prime mover is becoming more and more popular, particularly where large installations of high horsepower are required.

The Diesel engine has also been much improved in the past few years and due to its high thermal efficiency, it is becoming increasingly popular for medium and small size ships where economy of operation is an important factor.

The gas turbine has not yet proven itself in the field of marine propulsion; however, due to its thermal efficiency which theoretically will approach that of a Diesel engine, it appears that eventually it may replace the steam turbine in large vessels where high horsepowers are desired. At the present time there are a few of these units in operation throughout the world in stationary power plants where they are operating satisfactorily. Power plants of this type will unquestionably be used in ships of various types within the next few years.

The lubrication of each of these four types of power plants presents distinct problems and requires widely different lubricants. These will be discussed in detail.

The Lubrication of Reciprocating Steam Engines

The lubrication of these engines is fairly simple and, in general, is well understood. The internally lubricated parts are pistons and cylinder walls, valves and valve seats and the packing of the piston rods and valve stems. They are usually lubricated by means of tallow cups, by swabbing the rods, by the use of hydrostatic lubricators and by mechanical forced feed lubricators which supply the oil to atomizers or apply it directly to the point to be lubricated.

The functions of a steam cylinder oil and the properties it must have to perform these functions satisfactorily in marine service can be summarized as follows:

It Must:

1. Lubricate in the presence of hot water.
2. Maintain a fluid film at high steam temperatures and pressures to seal and lubricate moving parts under load.
3. Lubricate with a minimum feed rate from a limited number of points of application.
4. Resist the destructive action of high temperatures.
5. Atomize readily and completely.
6. Separate readily from exhaust steam and condensate.

It Must Have:

1. The ability to form a lubricating film on wet surfaces and resist the washing action of hot water and steam.
2. High "oiliness" or "lubricity" and antiwear properties and sufficiently high viscosity at the operating temperature to support the applied loads without allowing rupture of the oil film.
3. Sufficient metal wetting ability and fluidity to spread rapidly and cling to engine parts.
4. Good heat stability, low volatility and a minimum gum and carbon forming tendency.
5. Relatively low surface tension and low volatility without excessive initial viscosity.
6. Good demulsibility and the ability to lubricate with a minimum feed rate.

Actually only a small fraction of the atomized oil carried by the steam is used ultimately as a lubricant. The major portion passes on through the machine with the steam. The use of an unsuitable oil or an oil supplied in too great a quantity frequently results in deposits, stuck piston rings and other troubles of this nature.

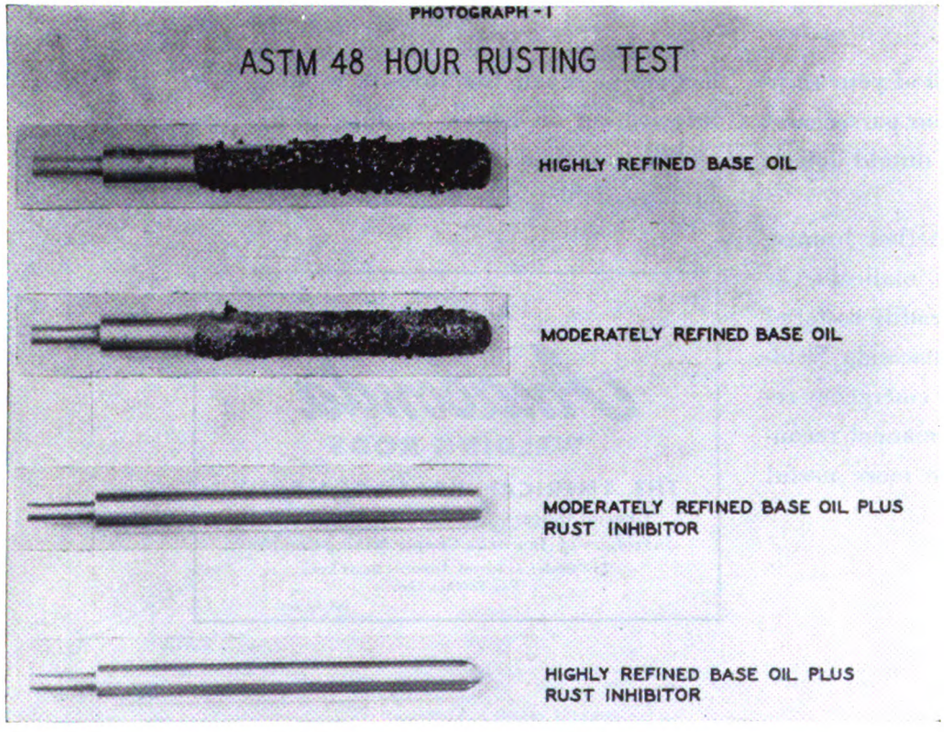
The major problem in the lubrication of reciprocating engines is to determine the type of oil required and to purchase from a reputable manufacturer.

The Lubrication of Steam Turbines

The early steam turbines were hand oiled and the oil served as a lubricant only. With the development of modern large steam turbines with a circulating oil system, the oil was called upon to perform a number of functions other than lubrication. Modern turbine oils must not only provide the conventional hydrodynamic lubrication of turbine shaft and thrust bearings and couplings, but also must act as:

1. A coolant which removes frictional heat and heat radiated and conducted to the lubricated parts by

PHOTOGRAPH - 1



Presented before the Northern California Section of The Society of Naval Architects and Marine Engineers, December 30, 1947.
**Product Acceptance Department, Standard Oil Company of California.*
***California Research Corporation.*

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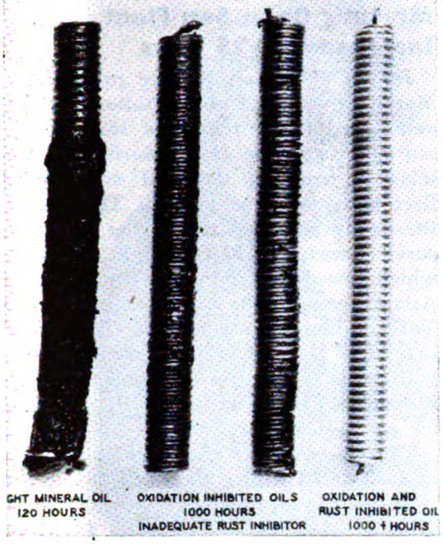
PHOTOGRAPH - 2

COPPER-IRON WIRE CATALYSTS
USED IN ASTM TURBINE OIL OXIDATION TESTS



the steam.

2. A gear lubricant which lubricates the reduction gears and accessory drive gears.
3. A hydraulic medium which actuates the governor.

The turbine oil is required to perform these functions over long periods of time. A life span of from three to five years and even longer is not unusual for a charge of turbine oil. Thus, one of the prime requisites is stability.

The history of the development of steam turbine oils parallels the development of the modern high speed, high temperature turbine. Early turbine oils were good lubricants but lacked stability. As steam temperatures increased, turbine oil sludging became more prevalent. Reduction of the sludging tendency was accomplished by increased refining to remove the sludge forming constituents which increased the stability to the neglect of other considerations, such as the ability of the oil to wet metal surfaces in the presence of water. Thus, as the stability of these oils was increased, their ability to prevent rusting of the turbine parts in the presence of water was reduced. The next step in the improvement of turbine oils was made when additives were introduced for the express purpose of imparting rust preventative characteristics to the oil. As the severity of the service increased with the design of higher speed, higher temperature, more compact turbines, the need for further increasing the oxidation stability of the oil became apparent. Additive compounds known as oxidation inhibitors were then developed which, when included in a highly refined turbine oil, imparted a stability far beyond that attainable with any straight mineral oil.

Composition of Turbine Oils

1. Base stock.
   a. All crudes used for the manufacture of lubricating oils can be and are used for turbine oil production.
   b. The manufacturers of turbine oils usually market a complete line of turbine oils ranging from straight mineral oils of a medium degree of refinement to highly refined, rust inhibited and rust and oxidation inhibited oils.

Regardless of prior treatment turbine oils are clay treated (filtered through activated clay) as a final step to attain optimum demulsibility characteristics. Naphthenic base crudes are the most widely used for manufacturing turbine oils of various degrees of refinement. The highly refined additive type turbine oils usually have high viscosity indices as a result of the type and degree of refining required for the removal of sludge forming components.

2. Additives used in turbine oils.
   a. Rust inhibitors are used in turbine oils to protect the metallic surfaces of the system from rusting in the presence of water. Only small amounts of the active ingredients are necessary for complete protection and the addition of these materials has no effect on the physical characteristics of the lubricating oil. The rust inhibitors are usually oil soluble, complex organic compounds. They accomplish their purpose by increasing the wetting ability of oil for steel surfaces relative to water. They may be said to plate the steel surfaces. See *Photograph 1.*
   b. Oxidation inhibitors are used in turbine oils to reduce the rate of oxidation of the lubricating oil and thus prevent the formation of sludge forming compounds in the lubricating oil. The inhibitors are usually nitrogen-hydrogen compounds (organic amines), sulfur compounds, aromatic alcohols, phenols or complex metallic compounds. These additives reduce the rate of oxidation of the lubricating oil by reacting with intermediate products of oxidation of the oil. See *Photograph 2.*
   c. Foam inhibitors are added to some turbine oils to increase the rate of separation of oil and air.
   d. Emulsion inhibitors are rarely used in turbine oils because they are usually ineffective against the powerful emulsifying tendency of the various contaminants and oxidation products.

The Effect of Additives on Other Properties of the Oil

The various additives used for turbine oils are selected and carefully screened with respect to possible effects on other additives in the oil as well as on the properties of the finished product. This is frequently the prime limitation involved in the choice of a satisfactory additive. For example, many excellent turbine oil rust inhibitors are known but relatively few can be used without adversely affecting either demulsibility, oxidation stability or non-ferrous metal corrosion to a prohibitive extent. It is interesting to note that so far as is known there is no basis in fact to prevent the brand of one refiner from being mixed with the brand of another refiner in a turbine oil system.

Additive type turbine oils may be mixed with straight mineral oils in any proportion. However, the practice of mixing additive type oils with straight mineral oils is not considered to be economical because of the dilution effect upon the additives in the compounded oil.

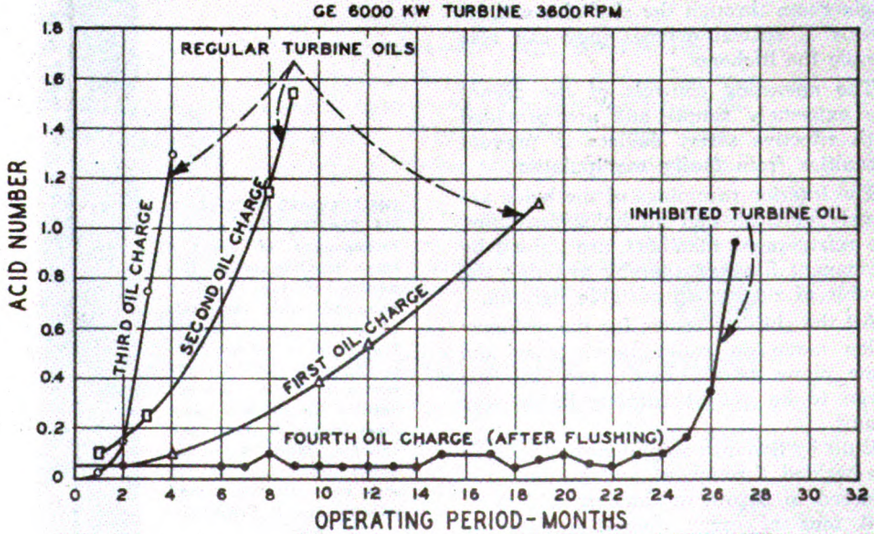
Clay or other adsorbent or chemically

(Continued on Page 44)

FIG. 2

EFFECT OF OLD OIL RESIDUES
ON NEW OIL LIFE

GE 6000 KW TURBINE 3600RPM



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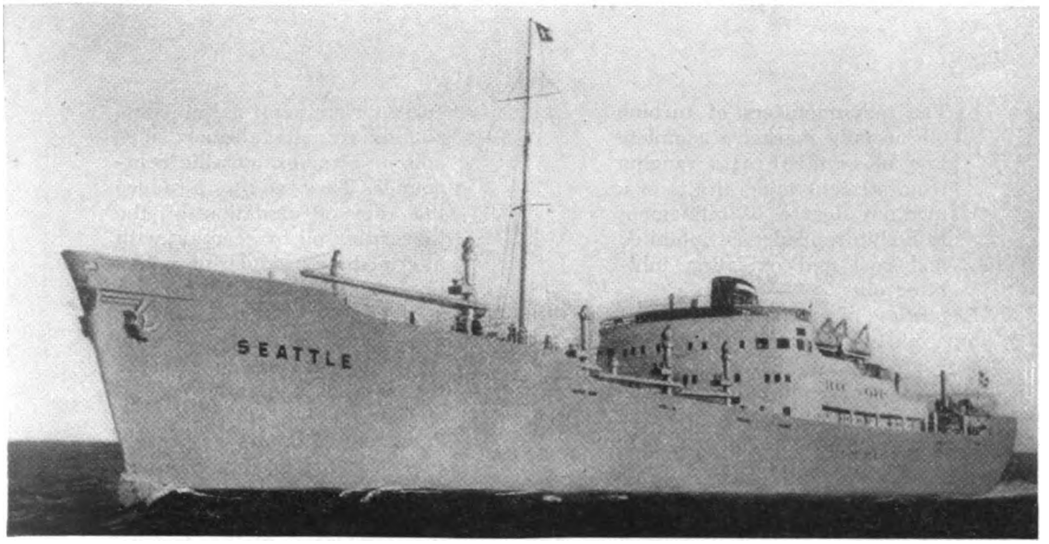


NO MASTS, KING POSTS, OR CARGO BOOMS seen in the silhouette of this vessel. . . . The Johnson Line's new 9,000 ton ms SEATTLE featuring a non-conventional cargo handling gear consisting of electric cargo handling cranes.

MS SEATTLE FEATURES ELECTRIC CARGO HANDLING CRANES

The 9,000 ton ms SEATTLE, first of five new vessels designed for a loaded speed of 20 knots for the Pacific-European service of the Johnson Line, arrived at the Pacific Coast in December with receptions held in Seattle, San Francisco and Los Angeles celebrating her arrival. She immediately became a mecca for ship operating and stevedore executives because of her cargo handling gear consisting of cranes, and the absence of masts, king posts, and cargo booms in her silhouette.

Constructed as open shelter deck types with length over-all of 502 feet, and a beam of 64 feet, the designers have fitted the vessels with seven hatches to permit use of a larger number of stevedoring gangs in an effort to cut down turn-around time in ports. Each hatch is served by a port and starboard crane to make total of 14 cranes with capacities ranging from two to five tons, and up to 10 tons in some hatches by operating two cranes in pairs. Two of them can be used for lifting engine parts directly out of the engineroom through the skylight, and by means of special devices they can also handle the lifeboats.

The operating controls of the cranes are extremely simple and are provided with effective safety devices to prevent casualties from faulty manipulation.

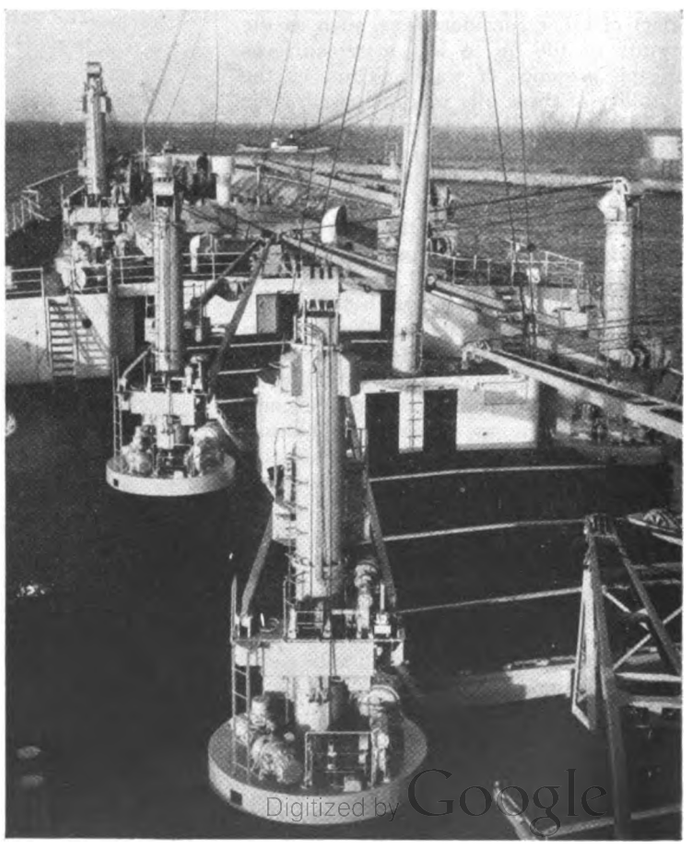
The interior trimmings of the holds are largely vertical, and all holds, including the refrigerated chambers, are lighted by permanent fixtures, thereby avoiding the trouble of rigging up portable lighting.

All the shifting beams for the ordinary holds move on roller bearings in the same plane as the hatch, enabling the cargo to be got at without lifting any beams.

Built by Swedish shipbuilders, the hulls are welded throughout and bottoms reinforced to permit drydocking with several tons of cargo aboard. Bows are strengthened as a precaution against ice floes.

All five motorships will have a cargo capacity of 578,000 cubic feet. Of this area 95,400 cubic feet will be taken up by refrigeration space, including 29,500 cubic feet of freezing chambers capable of maintaining temperatures of five degrees below zero. This guarantees perfect transport of perishables and fresh fruits through the tropics.

On her maiden voyage the vessel called at Dutch East Indies and Central America and touched at San Diego, Los Angeles, San Francisco, Portland, Seattle, and Vancouver, British Columbia. European ports on the return trip will include Antwerp, London, and Goeteberg. On future sailings the vessels will call at Hawaii.



THE FORWARD DECK of the MS SEATTLE, showing the arrangement of electric cargo handling cranes. This portion of the vessel is equipped with four sets of cranes to service her four forward hatches. The arrangement of the 14 cranes to service the seven hatches aboard ship gives them each a 41 foot reach, enabling them to handle goods from and to the ship even on the second railway track from the quayside.

⚓ ⚓ ⚓

Moran's Deep Sea Fleet Increased to 25 Tugs

Joseph H. Moran II, vice president of Moran Towing & Transportation Co., has announced the purchase of seven deep-sea tugs from the U. S. Maritime Commission, bringing its total ocean-going fleet to twenty-five vessels. The first of the newly acquired tugs to be placed in service was the EUGENE F. MORAN, which towed a T-2 tanker from a south Atlantic reserve fleet anchorage to New York on her first assignment. The second tug, KEVIN MORAN, was commissioned within the week after sea trials. The five remaining vessels will be ready for service early this year.

These seven tugs are sister ships, built in 1943 and 1944 for the U. S. Navy and were used in all theaters of World War II. They are 143 feet long, 33 feet 1 inch in the beam and 14 feet 6 inches in depth. Each is powered by two General Motors, 2-cycle Diesel-engines, 278-A type, 1900 B.H.P., which furnish power for two main generating units and two driving motors which work through a reduction gear to a single shaft and propeller. Long and short wave radio, gyro compasses, fathometers and the latest marine equipment for navigation are installed on all of them. They are capable of 14-knot sea speed, and are self-sustaining for more than 30 days at sea.

SS STELLA POLARIS Back In Cruise Service

The Norwegian luxury cruise ship STELLA POLARIS is operating out of New Orleans again. Ray Lewis, cruise director, announced that the ship will make three 23-day and four 17-day trips to the West Indies this season.

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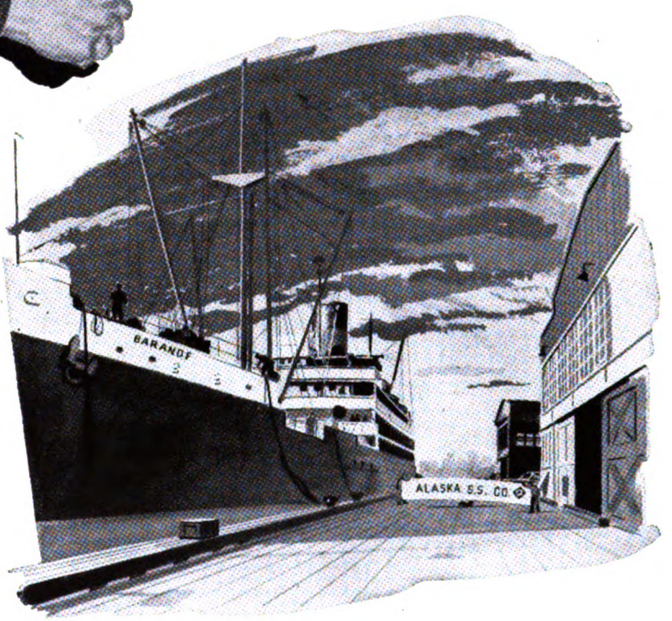
Sperry RADAR... saved 26 hours on a 1700 mile trip, says Alaska Steamship Company captain

Captain Joseph Ramsauer of the Alaska Steamship Company's SS BARANOF estimated that Sperry Radar enabled him to save more than a day on the 1700 mile run between Seattle and Seward, Alaska. Sailing on the inside passage for two days through dense fog, the BARANOF made port on schedule.

"This would have been impossible without Sperry Radar," Captain Ramsauer says.

gives "clear-weather" vision in foul weather

Captain Ramsauer reports that Sperry Radar, with its variable range-marker, "takes all guesswork out of the mid-channel position as well as out of beam and bow bearings while navigating through these inland waters in all kinds of weather." The Alaska Steamship Company's entire fleet of combination passenger and freight vessels are equipped with Sperry Radar.



"sees" ships safely through the worst inland water conditions

On Alaska Steamship runs from Seattle to Alaskan ports, Sperry Radar will provide these ships with sharp, clear indications of every above-water object or hazard encountered . . . in close harbor or inland water navigation . . . in fog, rain, snow and darkness.

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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

ATTENTIVELY LISTENING to the report by LEWIS M. DIAL ATC, on the survey of the wrecked CLARKSDALE VICTORY are these members of the Society of Port Engineers of Puget Sound, left to right: ANTON ANDERSON, Ship Sales Consultant; A. H. McDONALD, Marine Surveyor, McGinitie and McDonald; and J. D. WILSON, American Bureau of Shipping.

Puget Sound Society Elects H. V. Moore for President

The Society of Port Engineers of Puget Sound devoted their December meeting to election of officers for 1948 and followed with a Christmas Party featured by frolic with white elephant gifts, and an auction to supplement funds for the Society's Christmas Welfare Fund.

Items auctioned included surplus gifts brought by members and gifts sent to the meeting by supply firms. Revenue derived from the auction plus fines collected through the year netted sufficiently to provide five needy families with funds for their Merry Christmas.

Election results named H. V. Moore, Matson Line, as president; S. K. Smith, American Bureau of Shipping, vice-president; Alex D. Stewart, The LOG, secretary-treasurer; M. W. Felton, Alaska Steamship Company; John W. Elkins, Board of Marine Underwriters of San Francisco; and H. E. Lovejoy, to the Board of Governors for two year terms, and Merl Johnston, Olympic Steamship Company, to Board of Governors for one year term.

Entertainment included a showing of films taken at the engineers picnic in July by Q. A. Herwig, president, The Marine Service; and short talks by S. K. Smith, ABS; E. W. Lariviere, USMC, and Lewis M. Dial, surveyor with ATC. Dial reported on the survey he made of the CLARKSDALE VICTORY wreck.

Los Angeles Port Engineers Elect Landers President

Election of Leonard Landers to head The Society of Port Engineers, Los Angeles, with a new 1948 panel of supporting officers and directors, was the feature of the January 7 meeting, at the Hotel Lafayette, Long Beach. The panel:

President, Leonard Landers, American President Lines; Vice-president, Joe Wosser, Matson Navigation Co.; Secretary-treasurer, Bert Hale, Marine Solvents Service Corp.; Vice-secretary-treas., G. "Alex" Robinson, Long Beach Marine Repair Co.

Directors: Dan Dobler (chairman), The Texas Co.; Glenn Gulvin and George Curran, American Pacific SS. Co.; M. H. Kelley, Richfield Oil Corp.; C. V. Peterson, The Texas Co.; Fred H. Cordes, Deconhil Shipping Co.

The session was all-business, except that the fine steak dinner was sponsored by Frank Cavanaugh, of the Cavanaugh Machine Works, Wilmington, who was present with Stewart S. Small of the organization.

Landers opened and conducted the meeting as retiring vice-president, in the absence of Paul Gaudin whom he now succeeds as president.

Besides the election, others of the evening's accomplishments were these:

1. Voted: a paid life membership into the organization for Wm. Anderson, leaving the harbor area in a promotion to Philadelphia, with Keystone Shipping Co., and presented to Anderson a handsome desk-pen set.

2. Voted: The LOG again the Official Organ of the organization, reserving the right of this journal only to act as its spokesman.

3. Slated: a social party for the Biltmore Hotel in late January or early February.

4. Discussed: the recent Coast Guard changes in specifications of distress signals.

5. Discussed: possible affiliation as a group with the Southern California Technical Council, composed of engineers in 27 professional and scientific fields.

6. Heard: briefly from visitors, including "Tex" Simon, Pacific Far East Lines, member of the Port Engineers Society, San Francisco; and H. G. McKenzie, member of the New York Society, now a Long Beach resident.

G. J. Buckingham, assistant port engineer for American President Lines in Jersey City, N. J., died January 6th following a two weeks' illness.

Funeral services were held January 6th in Upper Montclair, N. J.

NEW OFFICERS AND DIRECTORS of the Society of Port Engineers, Los Angeles, elected in January are: Photo to left, front row, left to right, President—LEONARD LANDERS, American President Lines; Vice-president—JOE WOSSER, Matson Navigation Co.; Secretary-treasurer—BERT HALE, Marine Solvents Service Corp.; Vice-secretary-treasurer—G. "ALEX" ROBINSON, Long Beach Marine Repair Co.; back row, left to right, Directors; GLENN GULVIN and GEORGE CURRAN, American Pacific SS. Co.; M. H. KELLEY, Richfield Oil Corp.; DAN DOBLER (Board Chairman), The Texas Company. Other elected directors are C. V. Peterson, The Texas Co.; and Fred Cordes, Deconhil Shipping Co., not present this evening.

Right: STEWART S. SMALL (left), and FRANK CAVANAUGH, of Cavanaugh Machine Works, Wilmington, sponsored the dinner of the January meeting, Society of Port Engineers, Los Angeles, at the Hotel Lafayette, Long Beach.

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New York Society Holds Special Year-End Program

The Society of Marine Port Engineers, New York, N.Y., Inc., held a special year-end meeting in December to which all of the year's guest speakers were invited.

B. C. Edwards, president of the New York Society, called upon each of the guests to speak briefly. Of the total of 19 guest speakers during the Society's 1947 meetings, twelve were able to attend the December meeting. Those present were: Captain W. McGuire, USCG, representing Commodore H. C. Shepheard who was unable to get to New York from Washington; R. J. Baker, secretary-treasurer of the American Merchant Marine Institute; A. S. Thaeler, assistant chief engineer, Federal Shipbuilding and Dry Dock Company; Commander L. S. McCready, Lt. Commander C. W. Sandberg, and Lt. Commander L. F. Gaudreaux, of the U. S. Merchant Marine Academy at Kings Point; R. J. Ronan, chemical engineer, The Texas Company; Walton Waddill, mechanical engineer, The Texas Company; A. R. Gatewood, chief engineering surveyor, ABS; L. R. Sanford, executive vice president, Shipbuilders of America; B. E. Meurk, manager of construction and repair, Isthmian Steamship Company.

Guest speakers invited but unable to attend besides Commodore Shepheard were: Walter Green, American Bureau of Shipping; Maitland S. Pennington, vice president, Pacific Transport Lines; Congressman W. W. Bradley; the late Congressman Fred Bradley; Guy LaBounty, former chief investigator for the Committee on the Merchant Marine and Fisheries of the House of Representatives; Ivan D. Eby, superintendent engineer, Moore-McCormack Steamship Company; and J. H. Roper, consulting engineer for Koppers Company and the Robert H. Allen Company.

Thearle Heads San Francisco Port Engineers

President for 1948 of The Society of Port Engineers, San Francisco, is Philip E. Thearle, superintending marine engineer of the San Francisco Port of Embarkation, United States Army Transport Corps.

Mr. Thearle was elected unanimously at the January meeting of the Society to succeed Frank Smith, American Mail Line.

Chosen as vice president was M. C. (Charley) Wright, Deconhil Shipping Company, succeeding Louis Deppman, Sudden & Christenson. Reelected secretary-treasurer was James A. Riemers.

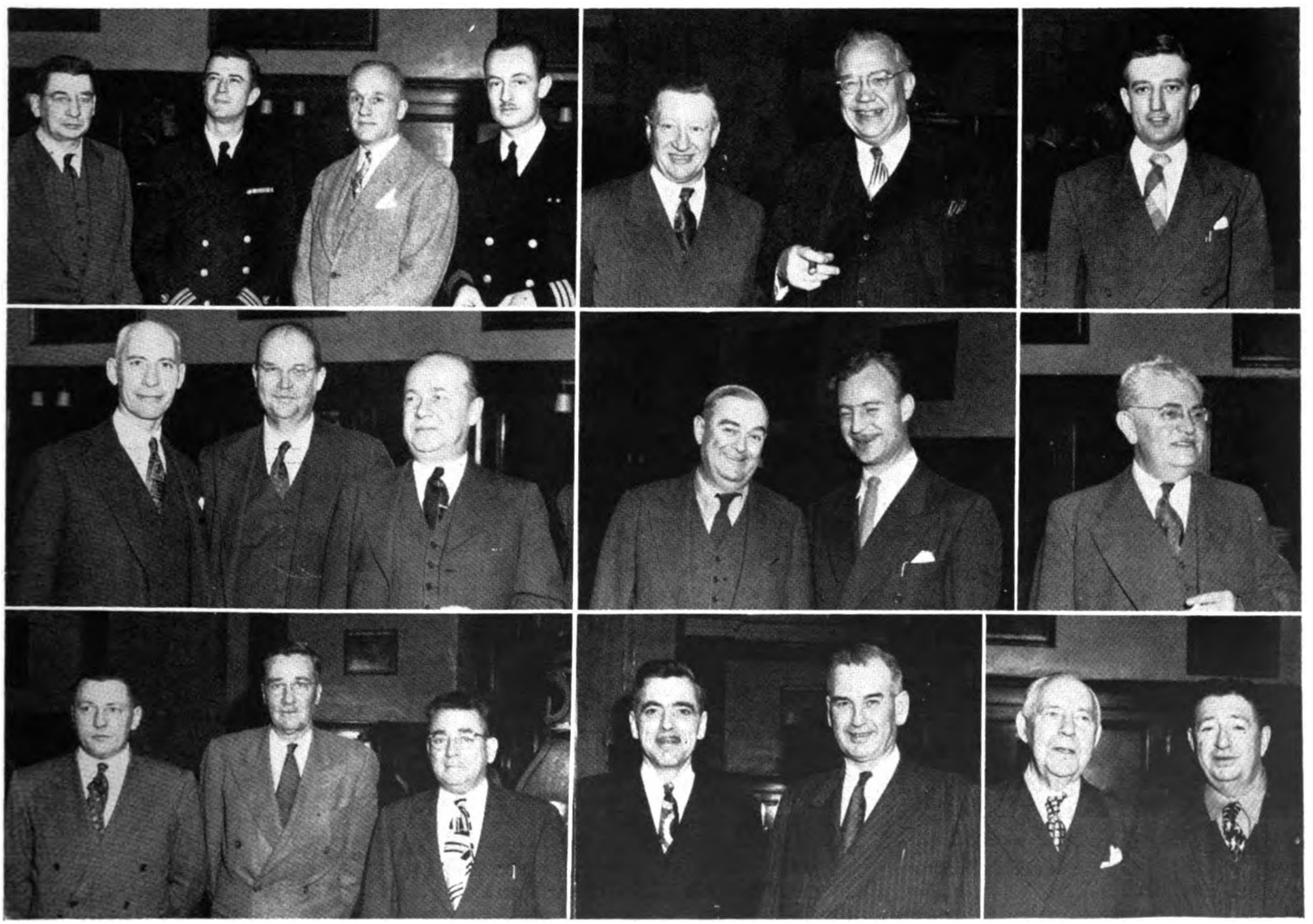
New members of the Board of Governors, elected at the January meeting, are Frank Smith, V. E. Foell, United States Lines, and William Billings, Pope & Talbot Lines.

The new president, Mr. Thearle, has

MEMBERS, GUESTS, AND GUEST SPEAKERS at the December meeting of The Society of Marine Port Engineers, New York . . . Left to right, top row, L. S. HIGGINS, Port Engineer, South Atlantic Steamship Co.; LIEUTENANT COMMANDER C. W. SANDBERG, Engineering Dept., Kings Point; A. S. THAELER, Assistant Chief Engineer, Federal Shipbuilding & Drydock Co.; COMMANDER L. S. McCREADY, Head of Department of Engineering, Kings Point; VAL SAVAGE, Marine Supervisor, Gamlen Chemical Co., New York; L. R. SANFORD, Executive Vice President, Shipbuilders Council of America; TED LANE, President, National Refrigeration Co.

Center row—AL GALE, Head of Marine Service Department, Babcock & Wilcox Co.; LINN M. RAKESTRAW, Manager Marine Department, Foster Wheeler Corp.; E. L. BOLAND, Marine Sales Engineer, Babcock & Wilcox Co.; G. P. HAYNES, Vice President, Todd Combustion Equipment Division, Todd Shipyards Corp.; GEORGE TOLLEFSEN, President, Tollefsen Bros.; R. J. BAKER, Secretary-Treasurer, American Merchant Marine Institute.

Bottom row—VERNON C. CHRISTOPHER, Sales Engineer, Gamlen Chemical Co.; CHARLIE J. MALLYN, Marine Surveyor, New Orleans; RICHARD J. PONDS, Marine Superintendent, Curtis Bay Towing Co., Baltimore, Maryland; L. B. PEABODY, Assistant Marine Superintendent and JOHN H. HEARING, Marine Superintendent, Alaska Transportation Company, Seattle, Washington; JAMES FRENCH, Marine Surveyor; CAPTAIN W. McGUIRE, Chief Marine Inspection Office, Third Coast Guard District.



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HEADS OF THE SOCIETY OF PORT ENGINEERS, SAN FRANCISCO . . . left to right, M. C. WRIGHT, Deconhil Shipping Company, Vice President; PHILIP E. THEARLE, USAT, President; and JAMES A. RIEMERS, Secretary-Treasurer.

THE SOCIETY OF PORT ENGINEERS

been identified with the maritime industries since 1909 when he began practicing his profession as a naval architect. He served with Theodore E. Ferris, New York naval architect, in 1935 was naval architect at the Bethlehem yard in San Francisco, in 1938 went to the United States Navy yard at Bremerton, Washington, previously he was superintending engineer for the Army Transport Corps at San Francisco's Fort Mason and during the war was general superintendent of the Navy repair base operated by General Engineering at San Francisco and superintendent of hull construction at Bethlehem-Alameda.

At the January meeting of the Society, Frank Smith, the retiring president, reported on the very successful first annual Christmas dinner dance given by the organization at the Fairmont Hotel in December. The total attendance was approximately 340.

The president couldn't come, but everybody had a good time. Marshall T. J. Garlinger, member of the dance committee and assistant to Mr. Thearle at Fort Mason, wrote invitations to President Truman, Governor Earl Warren of California and Roger Lapham, then mayor of San Francisco. He received courteous "thank-you" letters from all, but each declined due to the pressure of more important business.

President Frank Smith was chairman of the dinner dance committee and the affair was described as one of the most successful social gatherings ever held by the marine fraternity of San Francisco.

Jack Faville, formerly general superintendent of the marine repair ships at the Army Transport docks at Fort Mason, is announced as a new assistant to Mr. Thearle, succeeding William Blake. Taking Mr. Faville's former post is William Harris.

Columbia River Engineers Continue Studies on By-Laws

Kenneth Webb, principal surveyor at Portland, Board of Marine Underwriters of San Francisco, has been named chairman of the Board of Governors, Society of Port Engineers, Columbia River area.

Studies on by-laws have been continued by a committee headed by James Saviski, U. S. Maritime Commission. A recommendation that members be limited to regular and honorary members and that annual elections be held in May has been approved. Persons whose duties are connected with maintenance and repairs of vessels in operating and sales and service capacities are eligible as regular members.

The December meeting was featured with a Tom and Jerry party and an informal discussion of society policies.

Lubrication of Propulsion Plants

(Continued from Page 39)

active type filters cannot be used with inhibited turbine oils as these filters remove the additive from the oils.

Maintenance of Turbine Oils in Service

Centrifugal purifiers, frequently called "centrifuges," and strainers and filters are used extensively to purify turbine lubricating oils. The centrifuge is essentially a bowl or cylindrical vessel rotating at high speed. The oil is cleaned by passing it through the bowl. The centrifugal force exerted on the contaminants in the oil, which are of different gravity, causes the solid impurities to be deposited on the surface of the bowl. The water entrained in the oil is separated in a layer between the solids and the purified oil. To facilitate the separation of impurities from the lubricating oil, the oil should be heated to reduce its viscosity. The temperature required will depend upon the contaminants. A temperature of from 160° to 180° F is recommended for most satisfactory separation.

Inasmuch as water is the most common contaminant of turbine oil, and since it is difficult in service to prevent contamination by water, it is essential that the centrifuge be operated as a separator and not as a clarifier. It is good practice to operate centrifugal purifiers in large turbine installations continuously while underway and also to operate them until the unit is cool after the installation is shut down. This insures that the major portion of the water is removed from the lubricating oil and difficulty from rusting and the consequent contamination of the oil by rust will be minimized.

Another method used to improve the condition of used oil is called "sweetening." This consists of withdrawing a portion of the used oil from the system and replacing it with new oil. "Sweetening" was employed to reduce the concentration of sludge in the old type turbine oils where sludging limited the useful service life of the oil. Subsequently, during the transition stage in the development of modern inhibited turbine oils from highly refined, non-additive oils to highly refined rust and oxidation inhibited oils, it was found that the rust protecting property of the highly refined non-sludging, non-additive oils was improved by the addition of used turbine oils, and the practice was, at that time, widely recommended by turbine manufacturers, particularly for new installations. With the modern rust inhibited turbine oils, this practice is obsolete; and, in fact is to be avoided unless absolutely necessary. Tests have shown that as little as 10% of a moderately used oil can reduce the life of a fresh oil charge by as much as 75%. See Figure 2.

Adequate venting of the turbine oil circulating system should be employed in all installations to assist in the elimination of vapors. Vents should be installed at the uppermost possible location on top of the reduction gear case or oil sump. The vapors present in the oil sump usually have a high water content and may contain volatile organic acids resulting from oxidation of the oil. Condensate from this vapor is known to be corrosive; and, when returned to the oil, increases the rate of oxidation, sludging and formation of emulsions. Harmful constituents of this vapor including the water can be effectively removed by forced circulation of the vapor through a water cooled condenser with a liquid trap, thence to a regenerative type drier and back to the sump vapor space as mentioned above.

Cleaning of Turbine Oil Systems

Modern turbine oils are required to lubricate high speed bearings, worm gears and reduction gears, to act as efficient heat transfer and hydraulic media, and to protect metal surfaces from corrosion under humid or wet conditions for long periods of continuous operation. In order to perform these functions satisfactorily, the oil must be stable and clean. Stability can be built into the oil by the refiner, but cleanliness of the oil in service is a matter over which he has no control.

Two methods of removing contaminants from a turbine lubricating oil system are suggested. The first is a simple flushing procedure applicable where the contaminants consist of loose dirt and moisture. Examples are new installations and systems reassembled after complete or partial mechanical overhaul and cleaning. This procedure may be used for badly fouled systems in cases where time and facilities are not available for a complete

(Continued on Page 53)

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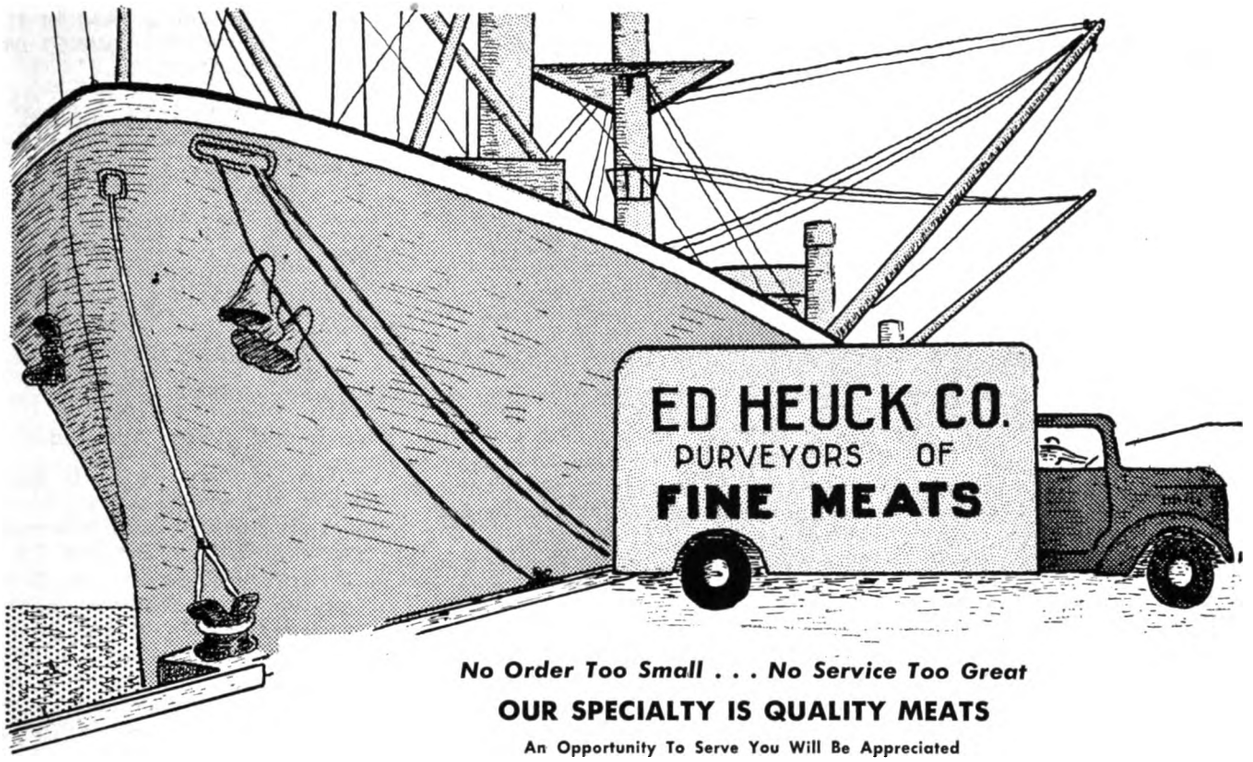

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TABLE 2—TANKERS UNDER CONSTRUCTION IN THE WORLD
1,000 Gross Tons and Over, As of September 30, 1947

Nation	Steam		Motor		Total	
	No.	Gross Tons	No.	Gross Tons	No.	Gross Tons
Great Britain and Ireland	5	39,399	40	359,330	45	398,729
British Dominions	2	4,000	.....	.....	2	4,000
Belgium	.....	.....	1	8,700	1	8,700
Denmark	.....	.....	6	64,986	6	64,986
France	3	28,528	3	31,399	6	59,927
Italy	.....	.....	3	12,325	3	12,325
Portugal	.....	.....	1	8,200	1	8,200
Spain	.....	.....	3	24,904	3	24,904
Sweden	.....	.....	10	112,500	10	112,500
United States	1	9,000	.....	.....	1	9,000
Totals	11	80,927	67	622,344	78	703,271

TABLE 3—TYPES OF PROPULSION AND FUELS ADOPTED FOR THE PREWAR AND POSTWAR SEAGOING TANKER FLEETS OF THE WORLD, EXCLUDING VESSELS OWNED BY THE MILITARY SERVICES

Propulsion and Fuel	December 31, 1930		December 31, 1939		June 30, 1946	
	No.	Gross Tons	No.	Gross Tons	No.	Gross Tons
Steam—Reciprocating Engines	818	4,809,129	692	4,286,867	602	3,448,754
Geared—Turbine Drive	70	489,730	114	869,877	165	1,417,808
Turbo—Electric Drive	.....	.....	3	34,917	507	5,240,510
Internal—Combustion Drive	317	2,307,329	741	5,901,327	699	4,922,696
Diesel—Electric Drive	7	44,107	6	38,987	8	36,527
Totals	1,212	7,650,295	1,556	11,131,975	1,981	15,066,295
Coal Burning	51	247,653	16	93,542	16	74,599
Oil Burning	837	5,051,206	793	5,098,119	1,258	10,032,473
Oil Engines	324	2,351,436	747	5,940,314	707	4,959,223
Totals	1,212	7,650,295	1,556	11,131,975	1,981	15,066,295

Tanker Fleets

(Continued from Page 31)

tically nothing else but turbo-electric drive type tankers, the Diesel propelled tankers now in existence constitute only 35 percent of the total number of 1981 and 32 percent of the total gross tonnage of 15,066,295 tons. These postwar Diesel tankers average 7042 tons, but this figure will increase considerably in the next few years due to the number of large Diesel propelled tankers now being constructed.

Turbine Propelled Tankers in Minority

While the trend in the United States during the prewar years was towards utilizing geared turbines as the prime movers in the construction of new tankers, and which is now being resumed in the postwar years, this was and is far from the case abroad, as previously mentioned, where internal combustion engines are favored for their relatively longer hauls. It will be noted from the Table that in 1930 only 70 of the 1212 tankers then in existence were turbine propelled, or but 6 percent of the total. The combined tonnage of these vessels was less than 500,000 gross tons, but their average tonnage was relatively high for the times, being 6996 gross tons. At the start of the war the number of tankers with this type of propulsion machinery had increased to 114 of 869,877 gross tons, or 7 percent of the total number and 7.5 percent of the total gross tonnage, these vessels averaging 7630 gross tons. A further increase is shown in the postwar fleet which totals 165 turbine driven tankers of 1,417,808 gross tons, representing 8 percent of the total number afloat and 9 percent of the total gross tonnage, and reflecting a further increase in average tonnage to 8590 gross tons.

Great Increase in Turbo-Electric Tankers

While in the years between the two wars turbo-electric drive had not been adopted for tanker propulsion, except in a few isolated cases, this form of drive had been successfully utilized in a number of comparatively large high speed combination passenger and cargo liners. At the start of the war there existed only 3 turbo-electric driven tankers of 34,917 gross tons. During the war years the Maritime Commission adopted this type of propelling machinery for the emergency tanker building program because relatively large horsepower units for the high speeds necessary then for tankers could be mass produced. As a result there were completed 525 such tankers with a combined tonnage of 5,422,819 gross tons and 8,672,028 deadweight tons, employing 3,922,244 shaft horsepower, in units of 7240 and 10,000 horsepower. There are now 507 of these vessels in commercial operation, 18 having been lost or sold to the military services. Turbo-electric drive type tankers now constitute 25 percent of the world supply and 34 percent of the gross tonnage, and average 10,336 gross tons and 16,500 deadweight tons. But few tankers will be constructed in the future employing this type of propelling machinery or Diesel-electric drive. It will be noted that there now exist 8 tankers of 36,527 gross tons employing the latter type of drive.

Fuels and Boilers Adopted

The use of coal as fuel in tankers was never very widespread and in 1930 only 51 vessels burnt coal in their steam generators. This number has declined to 16 vessels of 74,599 gross tons in the postwar fleet. There has been a 50 percent increase from 1939 to 1946 in the number of tankers burning oil in their steam plants, so that 63 percent of the world tankers now have oil burning steam generators. The balance of 707 use Diesel oil.

Scotch boilers were utilized in 858 tankers in the 1930 world tanker fleet, but this total declined to 720 by the start of the war in 1939, and today totals about 650 units. Watertube boilers, never very popular abroad, were installed in only 30 tankers of the 1930 fleet. This had increased to 89 units by 1939, and now totals about 624, this type of boiler being used in the higher class high-speed vessels.

TABLE 1—WORLD MERCHANT TANKER FLEETS—PREWAR AND POSTWAR
1,000 Gross Tons and Over—Excluding Great Lakes and Inland Waterways

Flag	September 1, 1939			September 30, 1947		
	Number	Gross Tons	Deadweight	Number	Gross Tons	Deadweight
United States	403	2,854,583	4,477,100	742	6,642,580	10,593,700
British Empire	477	3,214,991	4,760,800	481	3,313,944	4,864,700
Argentina	27	142,540	198,300	33	185,227	261,500
Belgium	10	70,429	101,100	6	47,453	71,600
Brazil	2	7,900	12,200	8	33,618	48,400
Chile	2	7,586	9,600	3	9,341	12,100
China	.....	.....	.....	22	51,014	72,600
Colombia	1	1,976	3,100	1	1,976	3,100
Cuba	1	1,983	3,200	.....	.....	.....
Denmark	14	106,469	165,600	12	97,696	150,600
Egypt	.....	.....	.....	1	5,917	7,300
Finland	2	7,773	11,000	4	22,521	34,700
France	50	322,197	475,100	35	272,196	414,400
Germany	42	278,121	403,900	5	34,161	52,200
Greece	8	32,410	49,700	6	28,235	42,500
Honduras	1	7,623	11,200	2	14,071	21,000
Italy	86	430,690	631,600	39	254,282	382,900
Japan	49	442,651	615,800	10	49,263	70,500
Mexico	2	9,540	14,500	12	74,122	114,600
Netherlands	105	525,608	740,000	80	409,919	570,700
Norway	266	2,077,193	3,130,900	196	1,659,505	2,518,800
Panama	54	469,198	734,300	134	1,066,470	1,693,400
Peru	1	2,820	4,300	1	2,820	4,300
Philippine	1	5,236	7,700	.....	.....	.....
Poland	.....	.....	.....	1	6,487	9,300
Portugal	4	7,430	9,500	7	32,870	49,500
Rumania	3	14,737	22,600	.....	.....	.....
Spain	15	72,955	101,500	23	123,919	171,000
Sweden	20	168,519	257,000	37	324,019	492,900
Switzerland	.....	.....	.....	2	11,571	17,900
Thai	1	1,458	2,000	.....	.....	.....
Turkey	1	3,723	6,200	2	7,272	10,500
Uruguay	.....	.....	.....	2	20,592	33,600
U.S.S.R.	27	127,798	183,200	30	122,690	181,600
Venezuela	24	65,847	88,900	26	73,727	101,800
Yugoslavia	1	3,177	3,300	1	6,074	9,400
GRAND TOTAL ALL FLAGS	1,700	11,485,161	17,235,200	1,964	15,005,552	23,083,100

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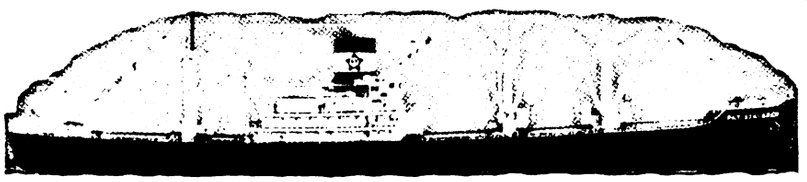

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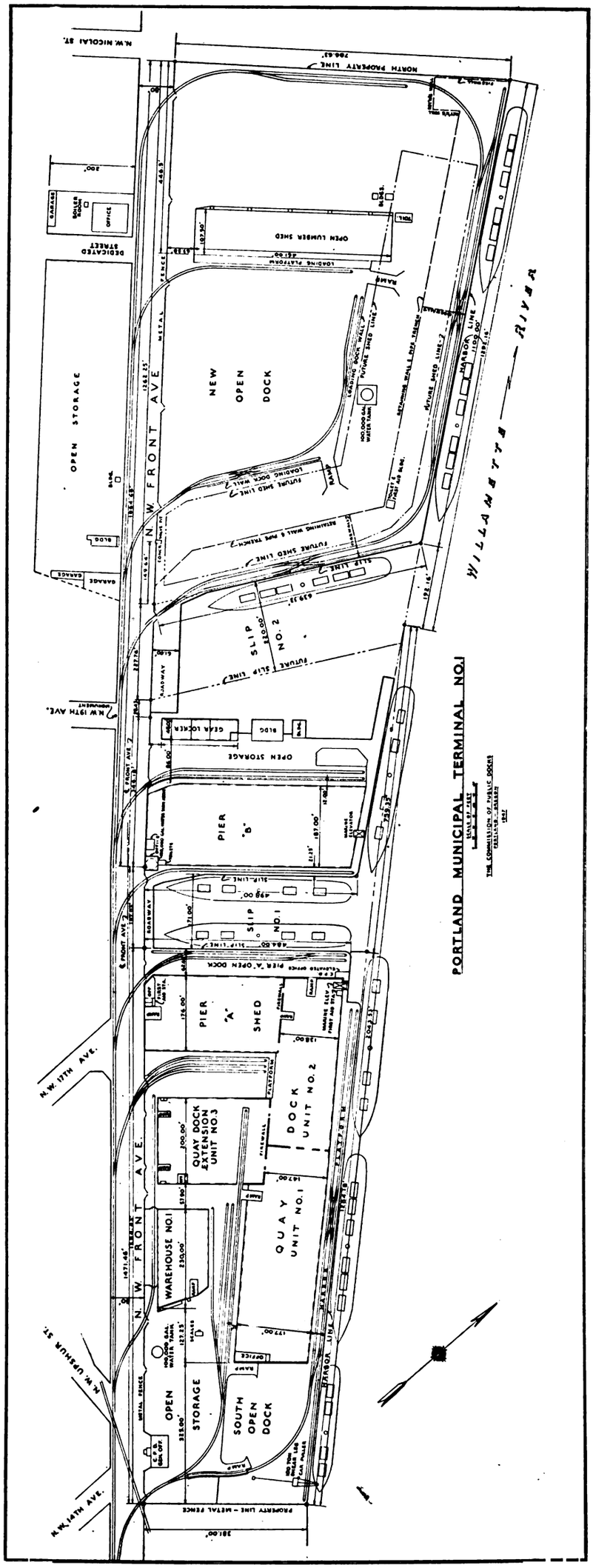
Port of Portland's New $2,000,000 Open Pier



New $2,000,000 Open Pier Being Built at Portland

Under a contract with the Commission of Public Docks, Portland, Oregon, the General Construction Company has started construction of a new two million dollar open pier on a site conveniently located to the city's downtown industrial district. The property is one purchased some months ago from the Eastern-Western Lumber Company.

L shaped, the new pier will incorporate the latest features in terminal construction and will provide berthing space for two ships on an 1100 foot harbor face and an additional ship in a slant slip which has approximately 600 feet of berthing space.

Inclusive of the pile supported pier, the entire area comprises 22½ acres, all to be paved with asphaltic concrete. Provision is made for all berths to be served with double track railroad, with the track making a complete loop around the area, to facilitate switching. New trackage, inclusive of storage tracks in the open area inshore, totals one mile and a quarter.

Although provision is made for future sheds no buildings are to be constructed under the current contract. As part of the future planning, the pier will be constructed now at two levels. A 39 foot wide apron, plus the future shed width and plus space for 220 foot wide rear loading platform will be built at street grade. The area back of the loading platform will be depressed three and one half feet to provide future tail gate delivery. Ramps lead between the two levels.

Pressure treated piling and lumber have been specified. Concrete fire walls, timber draft curtains, a complete system of under-pier catwalks, and the entire wooden construction area fitted with automatic sprinklers, are among some of the special features incorporated in the design.

Quantitative estimates involved in the new work call for 163,000 cubic yards of excavation; 91,000 cubic yards of fill; 17,000 cubic yards of rock rip-rap; more than 5,000 treated piles varying in length from 40 to 110 feet; 3,000,000 F.B.M. of treated lumber, and 3,000 cubic yards of concrete in a retaining wall at the inshore end of the pile supported face. Piling lengths are figured on a basis of securing a penetration of 35 feet.

Bids were opened in August, 1947 to disclose a variance of $1,000,000 between the high and low bidder, and a difference of half million dollars between the low and second bid. The actual contract is for $1,830,000.

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Another New Industry For Kalama

Abe Moawad, manager, port of Kalama, Washington, has announced lease has been signed with the newly organized Kalama Lumber Company for use of port property for a sawmill of 60,000 F. B. M. capacity per eight hour shift. This new industry is in addition to the Columbia Veneer Company, recently announced.

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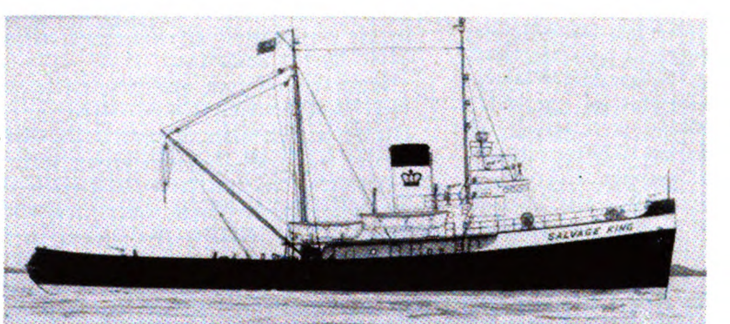

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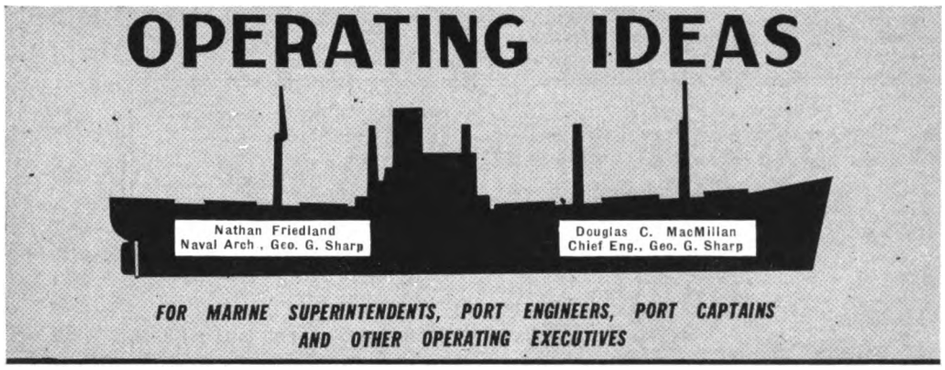


Turbine Operation Influenced By Condenser Characteristics

By DOUGLAS C. MacMILLAN
Chief Engineer
George G. Sharp

During the war years, and in the urgency of getting out ships, some changes in the design of machinery plants were made in order to simplify construction and operation. At the same time, these designs utilized main units that were to a large extent completely developed during the prewar C type ship program. The combination of these factors has not resulted in the most economical designs possible for the basic conditions selected. Recent analysis of performance and the related design features discloses some information that may be useful to the operating engineer.

The C3—8500 HP turbine was originally developed for a high efficiency machinery plant, utilizing three stages of feed heating. Changes made subsequently reduced the feed heating to two and finally to one stage in the AP3 Victory Ships. Also, modifications of the AP3 design have introduced a number of steam driven auxiliaries, whose exhaust is available for feed heating, and where this additional exhaust plus the normal is sufficient for feed heating, the turbine practically operates non-bleeding. It will be appreciated that these changes have materially altered the steam flow quantities passing through the various turbine stages when developing a given power. This particularly applies to the exhaust end, and most especially when operating in cold sea water at high vacua. The net effect of all of these changes has been to increase the steam flow through the turbine exhaust when developing a given power.

Reference to textbooks and other literature on the subject will disclose that turbine efficiency decreases rather rapidly with increase in vacua. For example, for a turbine designed for 28.5″ vacuum, one chart shows that the turbine efficiency will be 1.6 per cent poorer at 29 inches and 4 per cent poorer at 29.4 inches than when operating at 28.5 inches. This loss of efficiency is due to increase in velocity through the last stage (due to the increase in specific volume of the steam), and also due to increasing moisture content. The effect of the former is predominate, and the extent of this exhaust loss is indicated by Fig. 23 on Page 29 of Vol. 2 of "Marine Engineering," (published by The Society of Naval Architects and Marine Engineers). When operating at constant nozzle setting and inlet steam conditioners, the flow conditions are approximately as follows:

Vacuum, inches mercury	28.5	29.0	29.4
Approximate Exhaust Steam Flow, lb./hr. ratio	1.0	.988	.971
Specific Volume, cu.ft./lb.	400	575	930
Flow, cu.ft./hr. ratio	400	568	904
Flow Volume Ratio	1.0	1.42	2.26

For these changes in flow, the exhaust loss is correspondingly increased, as indicated by the reference.

Examination and analysis of the turbine performance charts normally included in the manufacturer's instruction books, indicates that the losses with increasing vacua may be even greater than given by the textbook data cited above. This analysis indicates reductions in turbine efficiency of 2 to 2.5 per cent at 29.0 inches and 4.2 to 5.8 per cent at 29.4 inches. These losses naturally lead to the question, "Just how much are we gaining by using high vacua?"

The main expense entering into the production of vacuum is the power necessary to drive the circulating pump. This power expenditure may be reduced in a new design by designing for less vacuum, and this should be considered especially if an existing turbine is to be used. For existing ships, this power expenditure may be reduced by slowing down the circulating pump. When this is done, the quantity of circulating water is reduced approximately proportionately; however, the vacuum falls rather slowly. The effect of these changes has been caluculated for the AP3 Victory Ships and the results are given by Fig. 1, which shows main condenser performance based on pump speed, for two sea water temperatures and two turbine nozzle settings (A and B) which correspond to the settings which would be used for normal and maximum power at approximately design conditions. These curves indicate that vacuum is not much reduced for an appreciable reduction in pump speed. When operating at full pump speed, or approximately 635 RPM, the power input to the pump is 81 kw, and when operating at minimum pump speed of 475 RPM, the input is about 36 kw.

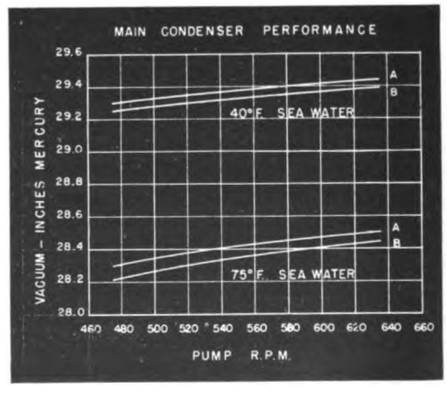
Now, if we compare the overall performance at the two pump speeds, and make the necessary adjustments to bring all to the same base, we find the following:

	A	B
Nozzle Setting		
Sea Temperature, deg. F.	40	40
Pump RPM	635	475
Vacuum, inches mercury	29.44	29.3
SHP (Manufacturer's Curves)	8740	8710
Steam Differences, lb./hr.		
(1) Throttle steam to equalize HP...	0	+300
(2) Equivalent throttle steam for bleeding for feed heating steam for (1)	0	+20
(3) Equivalent throttle steam for bleeding for feed heating due to different vacua	+175	0
(4) Generator steam for pump power (14 lb./kw generator steam rate)..	+630	0
(5) Throttle steam for bleeding for feed heating steam for (4)	+65	0
Sum	870	220
Difference	+650	
Fuel oil, lb./hr.	+47.5	
Fuel oil, bbl./day	+3.3	
Fuel rate change, approximate	+1%	

The above calculation indicates that it is more economical under the conditions stated to operate the main circulating pump at minimum speed rather than maximum speed, even though the latter gives a greater vacuum. While the increase in efficiency is not great, it should not be overlooked, especially since operation at reduced speed results in lower condenser tube velocity and consequently less danger of condenser tube erosion.

The above calculations were based on uniform condensate temperature depression below steam temperature. If this depression should be greater at the higher vacuum, then the differences would be greater. Also, the calculations are based on one stage of feed heating to 240 deg. F. If two stages of heating to 240 deg. F. are used, calculations for the same conditions indicate a saving of about 2.9 bbl./day in lieu of 3.3. Calculations for 75 deg. F. sea water indicate an appreciably smaller gain, being about 1.25 bbl./day in lieu of 3.3. At maximum power, the savings are approximately 5 per cent greater.

In general, therefore, it seems beneficial to operate this type of ship at minimum speed whenever the vacuum exceeds 28.5 inches mercury. We have made a



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cursory check of other designs, and in general find similar, but less conclusive results.

These statements do not mean that the turbine should not be operated at vacua in excess of 28.5 inches. It does mean that high vacua should be used only when it can be produced economically. If high vacuum is obtained with minimum pump speed, then it should be used, rather than attempt to reduce the vacuum by throttling. Throttling under any conditions indicates waste. The gains to be expected when operating at vacua in excess of 28.5 inches are about as indicated by the following:

Vacuum	29.0	29.4
Gain in ideal heat rate, %	4.1	9.2
Loss in turbine efficiency, %	1.6 to 2.5	4.0 to 5.8
Gain in actual turbine steam rate, %	1.6 to 2.1	3.4 to 5.0
Gain after correction for feed heating, etc. %	1.0 to 1.9	1.4 to 3.8

When operating with high vacuum, the condenser performance is often poor, especially if the condenser is not carefully designed to prevent subcooling of the condensate. It is of course necessary to reheat the condensate by use of bled, exhaust, or live makeup steam. Since surplus exhaust is generally not available, especially when in cold sea water, the feed heating requirement detracts from the gain, as indicated by the above table. If the condensate depression is large, then the equivalent throttle steam that is bled to heat the condensate may more than offset the gain due to high vacuum. This is illustrated by the following, which assumes that the condensate depression is normally 2 deg. F., and in another case is 10 deg. F.

Vacuum	29.3	29.44	29.44
Exhaust steam temperature, deg. F.	68.5	62	62
Condensate depression	2	2	10
Condensate temperature, deg. F.	66.5	60	52
Additional condensate rise, deg. F.	0	6.5	14.5
Equivalent throttle steam (a)	0	105	235
Equivalent reduction in SHP	0	15	35
Gain in SHP due to vacuum	0	30	30
Gain in SHP, net	0	15	Loss 5

(a) Equivalent reduction in throttle steam due to bleeding at about 8 lbs. absolute (2 stage feed heating) to heat condensate to 66.5 deg. F. to equalize temperature.

It is not possible to set up any general rules concerning operation when subcooling exists. Condensate depression at normal vacuum should not exceed 2 deg. F., and at high vacuum should not exceed 5 deg. F. However, we have seen well designed condensers which showed no measurable depression when operating in 40 deg. F. sea water. Large depressions should be investigated, or referred to the condenser manufacturer for comments.

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How To Make Your Capacity Plan Earn Money

By NATHAN FRIEDLAND
Naval Architect
George G. Sharp

As competition for cargoes increases, the efficient use of a ship's deadweight and cubic capacity becomes more and more important. Where deadweight cargoes are common, the operator's chief concern is in securing maximum deadweight compatible with the ship's dimensions and scantlings, and the problem of sufficient cubic capacity may never arise. Lighter, bulkier cargoes, however, may predominate in many services and considerable attention must be paid to making full use of cubic capacity.

A discussion of the contents of a complete capacity plan is accordingly presented in the hope that the reader will thereby be able to use the capacity plan of his ship to greater advantage. Furthermore, these notes might suggest helpfull additions.

Use of Capacity Plan

Regardless of what type of cargoes are carried, a reliable capacity plan is essential to the optimum utilization of deadweight and cubic. But a good capacity plan can be much more than a deadweight scale and a series of deck plans and listing of hold capacities. This plan should contain all the information needed to book a full load of cargo and to stow it so that the vessel has adequate stability and satisfactory trim. To achieve this goal, the plan should contain the center of gravity of each cargo space, as well as its capacity. These data are needed to calculate the trim and stability that would result from any condition of loading. The capacities and centers of gravity of all tanks should, of course also be given. In order to permit rapid determination of approximate changes in drafts resulting from adding or removing weights, a trimming scale or similar diagram should be included. Associated with the deadweight scale there should be scales for displacement, tons per inch immersion, and moment to change trim one inch. The plan should give hatch sizes, deck heights under beams or girders, and clear distances between webs and major obstructions. Where unusually heavy cargo is anticipated, information concerning allowable deck loads will be very useful. And finally, the plan should give data concerning cargo handling gear, ship particulars, stores capacities, and light ship weight, center of gravity and drafts.

Cargo Capacities

The most useful part of the capacity plan is the table of cargo capacities. Usually both bale and grain capacities are listed, but where only one volume for any space is given, it is essential to know which figure is meant. The bale capacity of a given space is usually about 12% less than its grain capacity and may sometimes be as much as 25% less. Furthermore it is important to know how each capacity is defined and what deductions have been made in determining it.

The first volume calculated is the molded volume, which is the gross volume based on the ship's lines without any deductions whatsoever. After subtracting the actual volume occupied by structure, piping, battens, ceilings, etc. the result is the grain capacity. Grain capacity is about 98% of the molded volume and represents the space available for a bulk cargo filling the entire hold not occupied by structure or fittings. After making further deductions for space behind battens, above deck beams, or otherwise not accessible for stowing general cargo, the result is the bale capacity. But it is important to note that the actual space occupied by cargo as stowed is less than the bale capacity by an amount known as "broken stowage." Broken stowage represents the space occupied by dunnage, the space between and around packages or containers, or the space at the sides, ends, and on top of cargo. The naval architect can go no further than to provide bale capacities, since broken stowage depends on the type of cargo and will vary from 2 to 40% of the cargo space, with the average figure being 10 to 15%. The operator must make his own allowance for broken stowage on the basis of his own experience.

Grain capacity may be more specifically defined as the volume from shell to shell, bulkhead to bulkhead, deck to underside of deck plating overhead and inside hatchways to underside of hatch covers, with deductions for the actual space occupied by structural members, pipes, ducts, wireways, battens and ceilings. While grain capacity is of no value in stowing general cargo, it is an important design figure, and is of course, used when carrying bulk cargo if trimmed to fill the hold. Furthermore, this figure may be extremely useful in emergencies such as in estimating the volume of CO_2 needed to fill the hold or the amount of salt water that would enter in case of damage.

Bale capacity is the volume inside of the line of battens, face of frames, or stiffeners, from deck plating or ceiling up to underside of deck beams or girders, and inside of hatchways to underside of hatch beams. Deductions are made for overall volume of structural obstructions, piping, ducts, wireways, etc. Where access passages are provided, their volume is deducted. Very often reasonable allowance for access to the hold is made even if no permanent passages are provided.

While independent calculations for grain capacity will ordinarily be in close agreement, it is not uncommon that two equally skilled computers will arrive at bale capacities for the same space which differ from each other by as much as 5% of the volume of the space. This results from the possibility of making different assumptions regarding deductions, particularly concerning whether cargo is assumed stowed to the underside of deck beams or girders. It is therefore essential that the assumptions used in calculating bale capacities be

(Continued on Page 53)

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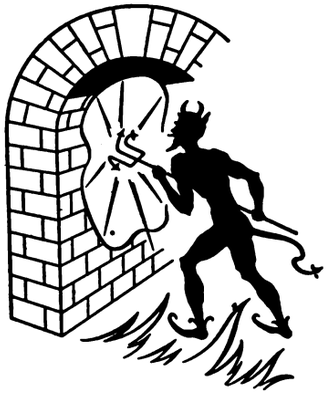

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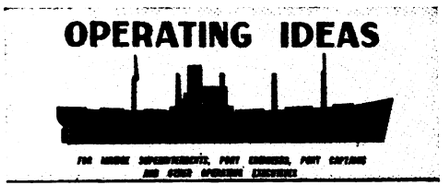

known if the figures are to be used with confidence. Where these assumptions are not described in the general notes, it may be possible to deduce what they are by means of a check calculation made of a small space having a rectangular shape —for example, a No. 3 Upper 'Tween in the ordinary cargo vessel.

In most capacity plans, capacities are not only listed in a table but are also shown in the appropriate space on the deck plan. Some operators have found it convenient to have the capacities shown on the deck plans broken down into volume in the square of the hatch, volume forward of the hatch, volume abaft the hatch, and volumes abreast the hatch, port and starboard.

Refrigerated Spaces

Special care is required in the use of figures for the capacity of refrigerated spaces, since there is a wide range of possible assumptions which might be made with regard to the deductions made from gross volume. In one extreme, the volume given is practically the air volume of the space. Volumes determined on this basis will give an over-optimistic picture of the capacity actually available for cargo. On the other hand, some computers make deductions for air spaces which they estimate are necessary for satisfactory air circulation. Such figures are apt to be pessimistic, especially for refrigerated cargoes or stores which do not require the air spaces originally estimated. The best practise is one where the actual volume available for cargo or stores is given and the necessary deductions for air spaces and broken stowage are made by the user of the plan to suit the actual cargo. Again, the important thing in the use of figures from an existing capacity plan is to know which volumes have been included and which have been deducted.

Where bulk cargo is carried, it may be convenient to list self-trimming capacities, taking account of the natural angle of repose of the material.

Tank Capacities

The table of tank capacities is straightforward, but it should be noted that where capacities are given in tons of liquid, they are based on a specific gravity which might be considerably different from that of the liquid actually in the tanks. Commonly used specific gravities are 37.23 cubic feet per ton for fuel oil and 40 cubic feet per ton for cargo oil.

Centers of Gravity

A most useful section of the table of capacities is that containing the center of gravity of the various spaces. By use of these figures, it is possible to predict draft, trim, and stability for any proposed type of loading. This calculation might well be the subject of a separate article, and to be complete, would require reference to data not given on the capacity plan. Suffice it to say that by use of the moment to change trim one inch and tons per inch immersion scales, the change in forward and after drafts resulting from adding or removing a specified weight at a given location may be determined.

Trimming Scale

Many capacity plans have a trimming scale which quickly shows approximately that changes in draft will result if a specified weight is added at any location in the ship. This scale occurs in various forms, the most common of which is a table printed under a profile of the vessel in which is given the number of inches which the bow and stern will rise or sink when 100 tons are added in the desired location. There are usually two scales for two different drafts and it is necessary to interpolate for immediate drafts. This same information is sometimes given in a table showing the effect of adding 100 tons at the center of each hold and also the effect of filling the peaks. These tables are easily prepared, and apply, of course, with change of sign for the removal of weights. In some European countries, the practise is to give the same data in the form of graphs.

By adding a scale giving the height of the transverse metacenter above the baseline, the capacity plan might be used for stability calculations. Many operators, however, might feel that this would unduly complicate the plan.

Dimensions

Dimensions of the hold and hatchways and indication of major obstructions such as webs, stanchions, access trunks, etc., are particularly important where large cases are to be handled. Sections through all the hatches are convenient for giving hatch widths and deck heights. A plan drawn carefully to a simple scale, such as $1/16'' = 1$ ft. is particularly useful in that dummies of the cargo packages or containers may be drawn to this scale, cut out and shifted about on the plan to secure the most advantageous stowage.

Deadweight Scale

The deadweight scale permits reading deadweight for any mean draft at which the ship may be floating. This scale is satisfactory for general use but certain corrections are necessary and may frequently reach important proportions. The first correction is for specific gravity and must be made if the ship is in fresh or brackish water. Another important correction is for hog or sag. Some adjustment must be made for trim, but this is usually small enough to be ignored. Finally, as alterations are made during the life of the ship, the deadweight scale should be modified to suit the changes in light ship weight.

Deck Loading

Where heavy material, such as steel or machinery, is to be carried, the allowable deck loads should be taken into account so as not to cause damage due to overloading. Some capacity plans give the necessary information by showing the allowable load in pounds per sq. ft. on the deck plans. Others show the total allowable load in tons on each area. Where these figures are not available they may be estimated for the ordinary cargo vessel by assuming an allowable load of 45 lbs. per sq. ft. for every foot of deck height, which is the usual figure used in design. For example in a 9 ft. 'tween deck, the allowable load would be 405 lbs. per sq. ft. Tank tops are designed for water heads up to the water line and are therefore good for about 1500 lbs. per sq. ft. Weather decks are usually limited to about 150 lbs. per sq. ft. to allow for the impact of seas. The above figures are useful for estimating purposes, but in all questionable cases it is advisable to consult the American Bureau of Shipping or a naval architect.

General Data

The capacity plan should list the number and capacities of the cargo winches and booms and should note the conditions under which special precautions are required in handling unusual loads. This information, together with data concerning such ship particulars as length, beam, depth, tonnage, machinery ratings, etc., is especially helpful for the indoctrination of new officers.

Conclusion

The success of a cargo vessel is measured by its earnings. These will be determined by the manner in which the ship is operated as much as by any of the features of its design and construction. A good capacity plan, intelligently used, can make a real contribution to the profitable operation of any ship. But it is important to know exactly what is meant by all the data on the plan. Where the general notes do not sufficiently clarify any doubtful points, it is advisable to make inquiries of the shipyard or naval architect who prepared the plan.

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Lubrication of Propulsion Plant

(Continued from Page 44)

cleaning job and it is desired to continue the turbine in operation until a complete clean-up can be scheduled. In no case should the simple flushing procedure be considered a substitute for a complete cleaning job.

The second method of contaminant removal is for complete cleaning applicable to all cases where the simple flushing procedure will not remove the contaminants from the system.

The choice of the particular cleaning procedure to be used should be agreed upon by the operator and representatives of the builder and oil supplier after a thorough inspection of the system has been made. In this way, due consideration can be given to the peculiarities of the particular case at hand.

Once the turbine lubricating oil system is clean, full advantage can be taken of the modern turbine oil's anti-rusting, anti-sludging properties to maintain the system in that condition.

(Continued in March Issue of The LOG)

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Industrialist Urges Support Of Anti-Inflation Program

Immediate and substantial reduction of individual income tax rates is one of the most important steps in the 12-point "Halt Inflation" program proposed by the National Association of Manufacturers, in the opinion of Thomas J. Bannan, who in December was elected a national vice-president of NAM.

"This is the only way to provide funds for further capital investment," said Mr. Bannan when interviewed in New York City by a staff member of The LOG following the NAM Convention there. "It has been found that 20 per cent of our national product is needed to keep our plant investment up to standard and to provide the necessary jobs to support our population in its ever increasing standard of living," he said. Mr. Bannan, who is president of Western Gear Works, with plants along the Pacific Coast, and a member of the board of Pacific National Bank of Seattle, was a regional vice-president of NAM last year. As he was elevated to the national vice-presidency his former office was taken over by Ernest Sweigert, of the Hyster Company, Portland, Oregon. This year, also, Mr. Bannan was vice-chairman of the all-important NAM resolutions committee. He is an ex-president of the national Gear Manufacturers Association.

"As American business men, we recognize that our system is right," said Mr. Bannan, "but few of us have time to study why it is right, why it is working and why it can keep on working. We find ourselves these days almost always on the defensive, and not always with proper ammunition. One of the important things NAM does is provide research which results in facts in favor of the American way of free enterprise and individual liberty."

These facts can be passed on to business leaders, Mr. Bannan said, but the work is lost, if a further step is not taken. "We must pass these facts on to our associates, which is to say our employees. NAM is getting the facts but American industry is really in desperate need for more business men who will take the time to spread the word—who will realize that attention to the broader phases of this fight for individual freedom and American enterprise is essentially a fight for their own business. And we need most of all to inform our employees intelligently, honestly, and carefully."

Mr. Bannan believed that the 12-point program of NAM should be studied and promoted by all business leaders. The 12 points were issued at the Convention by NAM president Earl Bunting, president of O'Sullivan Rubber Company and formerly of Portland, Oregon. They are in brief:

1. Reduce government spending.
2. Provide funds for further capital investment by immediate and substantial reduction of individual income tax rates.
3. Adoption of systematic plan for paying off the public debt.
4. Offer new long-term government bond issue to individual investors, proceeds to be used to retire government bonds held by banks.
5. Discourage inflationary expansion of bank credit by permitting interest rates to seek their own levels.
6. Redoubling efforts to increase production and pass on benefits to public.
7. Encourage management to plow back earnings by eliminating Treasury pressure to distribute 70 per cent of its profits as dividends.
8. Encourage labor leaders to forego demands for further general wage increases without a corresponding increase in productivity—except in cases of gross inequities.
9. Set aside restrictions on individual productivity, consistent with safety, and eliminate feather-bedding.
10. Give emergency foreign relief in goods, not dollars, with an American relief agency making the purchases—and identify them as having been provided by the U. S.
11. Finance reconstruction loans to foreign countries, as distinct from gifts and grants, through the World Bank and private sources rather than out of taxes collected from the American public.
12. Provide maximum incentive for increased production abroad by requiring foreign nations, as a condition of our aid, to establish sound currencies and to modify and eventually eliminate price control and other controls over the internal production and distribution of commodities.

The NAM outlook for business, Mr. Bannan said, was generally encouraging. But NAM leaders were also agreed that these had to be circumvented: labor unrest, material shortages, runaway inflation, possible government controls.

HALT INFLATION . . . the 12-point anti-inflation program proposed by the National Association of Manufacturers is given support by THOMAS J. BANNAN, President of Western Gear Works, Seattle, San Francisco, and Lynwood, California.

WASHINGTON

(Continued from Page 28)

New Make-Up of House Merchant Marine Committee

Representative Charles E. Potter, (R), 11th District of Michigan, was elected to fill the vacancy created by the death of Representative Fred Bradley, former Chairman of the House Merchant Marine Committee, and was appointed to that Committee. Several other changes have been made in the Committee make-up. The following is the membership as presently constituted:

Alvin F. Weichel (Ohio)
T. Millet Hand (N.J.)
Henry J. Latham (N.Y.)
David M. Potts (N.Y.)
Willis W. Bradley (Calif.)
Thor C. Tollefson (Wash.)
Raymond H. Burke (Ohio)
John J. Allen, Jr. (Calif.)
Horace Seely-Brown (Conn.)
John C. Brophy (Wisc.)
Robert Nodar, Jr. (N.Y.)
Edward T. Miller (Md.)
Mitchell Jenkins (Pa.)
Charles E. Potter (Mich.)
Schuyler Otis Bland (Va.)
Edward C. Hart (N.J.)
Herbert C. Bonner (N.C.)
James Domengeaux (La.)
Eugene J. Keogh (N.Y.)
Cecil R. King (Calif.)
Emory H. Price (Fla.)
Prince H. Preston, Jr. (Ga.)
Donald L. O'Toole (N.Y.)
Hugh A. Meade (Md.)
Clark W. Thompson (Texas)

Merger of Portland, Oregon, Port Bodies Being Discussed

The issue to consolidate the Portland Commission of Public Docks with the Port of Portland Commission as recommended by the port development committee of leading citizens continues to have attention of civic groups. A comprehensive report recently released by Thomas J. White, admiralty attorney of the city, suggests procedure for consolidation and a combination of 18 port districts on the Columbia river into a single commission, which would confine itself to matters of common concern to the area. The report has been favorably acted upon by one group of citizens. Both a port and city vote are required before a merger of the two Portland bodies can be effected. State legislative action is likely necessary to form a Columbia river port authority.

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Argentina

(Continued from Page 27)

the built-in type, equipped with innerspring mattresses. Some of these rooms also have an extra Pullman bed.

No staterooms in this class have private bath, but all have running hot and cold water. Bath and toilet facilities are conveniently spaced throughout the area.

The officers' quarters are on the boat deck, the crew's accommodations on B, C, and D decks, some fore and some aft. Three recreation rooms and lounges and four mess rooms have been provided for the crew. All officers' quarters were completely refinished, and some of the furniture was renewed.

From one to six men are berthed in each room in the crew's quarters, in two high standee berths with innerspring mattresses. These quarters were also completely renovated and equipped with new furniture.

Many changes were also made in the ship's hospital, on C deck. This area has a male ward with eight beds, a female ward with five beds and an isolation ward with one bed, in addition to a medical office, dispensary, pharmacy, diet kitchen, bath room and toilet facilities.

A gift shop is located on the A deck, a beauty parlor on B deck, and barber shops on B and C decks.

All of the ship's rooms and the running and standing rigging were renewed, all blocks tested and reconditioned or renewed.

A large area on the boat deck is set aside for deck games. This space also has a gymnasium and a large children's playroom.

The ship's 15 existing lifeboats, including one motor driven with radio receiver and transmitter, were all reconditioned, and three new lifeboats with davits and winches were installed. One existing motor driven lifeboat was discarded. These boats accommodate approximately 950 persons. They are all handled by mechanical davits and are raised by electric motor-driven winches.

Excellent Performance on Sea Trials

A 14 hour sea trial was carried out on December 30, over a course between Ambrose Lightship and Barnegat Bay. After testing the compasses and the radio direction finder the vessel was put through an eight-hour endurance run during which she averaged 18½ knots at 5900 kw. on each main motor, and a two-hour overload run which gave an average of 19 knots and 6700 kw. The steering gear was tested hard-over to hard-over during these runs.

Between the two runs a crash-stop was made from full ahead to full astern at which the propeller came to rest after 66 seconds and then started to revolve in the opposite direction. The crash stop was then repeated, but in the ahead direction. Readings and recordings were also made on all equipment not previously tested, and the various instruments were checked and adjusted.

After the completion of the trial trip, the ARGENTINA resumed her old run to the east coast of South America, on January 15. Her itinerary includes Rio de Janeiro, Santos, Montevideo, and Buenos Aires. On her northbound voyage she will touch the same ports in the reverse order, and will also call at Port-of-Spain, Trinidad. Later, when the two sister ships, the BRAZIL and the URUGUAY return to service, the fleet will make fortnightly sailings calling at the ports listed.

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Modern Power Plant

(Continued from Page 36)

simplify boiler design and operation. However, the burner is rather complex and considerable question has been raised regarding maintenance difficulties. A further development has been made in the mechanical atomizing burner involving much higher atomizing pressure. It would appear that this burner would offer considerable advantage since it possesses acceptable wide range features, does not increase the complexity of installation or operation, and is of a type generally similar to those already in service. Another development in this field is that of the vaporizing burner which possesses extremely wide range and excellent combustion under all conditions.

Upon the whole, it is believed that improvements in burner designs in the near future will result in better combustion and simpler installations with completely automatic operation through automatic control for all load conditions. The DB3 design specification calls for the conventional wide range mechanical atomizing burner.

Electrical Plant

Since this discussion concerns a dry cargo vessel, direct current is necessary for the winches and since the winch load is such a high proportion of operating load, D.C. is the obvious choice of cur-

(Continued on Page 56)

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Modern Power Plant

(Continued from Page 55)

rent. In the case of large passenger vessels this is not the case and our studies indicate that A.C. current for the vessel and propulsion auxiliaries with D.C. for the winches is preferable. Enlarging the exciter appears to be the most economical arrangement to obtain the necessary D.C. current.

The desirability of using motor driven auxiliaries in lieu of steam driven has been adequately supported by our investigations.

In connection with winches, one operator has expressed a preference for steam winches. They are considerably cheaper and would permit the use of A.C. for other electrical services and if an operator would consider their use on a ship of this type, considerable overall saving could be made.

Returning to the DB3 design, 3—400 KW Turbine Generators are specified with a 15 KW Emergency Diesel. All are 240/120 volt 3 wire D.C. The emergency is auto start with 20% drop in voltage.

Each main generator is supplied with its own condensing system including independent condenser, air ejector, condensate pump and circulating pump. This is an item where we may have deviated from the most economical arrangement but the Navy always requests this arrangement as a defense feature. Obviously this system offers the simplest operation and with the elimination of various subatmospheric cross connections required with the usual condensing system it may not be appreciably more expensive.

An investigation was made to determine if the generators should be operated on lower steam conditions as there is always the feeling that while 850 lbs.-900° is suitable for a 12,000 HP turbine that it is impractical for a 400 KW machine. All the major manufacturers have stated that they can produce satisfactory machines for these steam conditions at a nominal cost. Since the addition of reducing and desuperheating stations to obtain lower steam conditions would impose additional "gadgets" on the most important auxiliary in the vessel, it was considered best to avoid this even if it were more economical.

Motor Driven Pump with Turbine Standby Best

No discussion of marine power plants would be complete without some consideration being given the main boiler feed pumps. Because of the vital nature of this auxiliary, every effort is expended to obtain a reliable pump that needs little attention and becase the unit is sizeable every effort is also made to obtain a highly efficient unit.

Considering the pump alone the centrifugal pump shows the lowest operating cost. Because the pump efficiency falls off rapidly with size, the use of a centrifugal pump is not favored with the unit feed system.

Considering the type of drive for the feed pump, the studies indicate that the use of a motor driven pump with a turbine driven standby will result in the minimum operating cost. The purpose of the turbine driven standby is to reduce capital investment on equipment that possesses a low use factor.

The almost universal preference of the operators is for turbine driven centrifugal feed pumps and I expect the choice of motor driven centrifugals will evoke some comment. A tabulation of the complete study shows the following:

	20 Year Oper. Cost	20 Year Financing	20 Year Total
Vertical Simples Pumps.	61,000	18,680	79,680
Turbine Centrifugal	55,300	15,412	70,712
Motor Centrifugal—Geared	50,800	14,305	65,105
Motor Centrifugal—Direct ..	50,800	23,875	74,675

These prices are relative as to first cost of the equipment involved and were obtained in 1945. The operating cost is based on $2.54 oil. Obviously with $5600 difference the motor driven centrifugal is chosen.

In making an analysis of this kind it is important that account be taken of the reduction in cycle efficiency resulting from the reduction of steam bled from the main unit if steam driven pumps are used. Account has been taken of additional generator capacity, switchgear, auxiliary condensers, etc., for the motor driven pumps.

In connection with the 850 lbs.-900° cycle, there are no new problems introduced in connection with feed pump operation or design. Recent feed pump troubles of an erosion-corrosion nature are found in all cycles, both low and high pressure. The solution of this problem has been fairly well delineated through the use of chrome-nickel alloy casings.

Piping

Whenever high pressure high temperature steam plants are discussed the piping question is labored unmercifully. In making an economic study of the piping costs the writer found that the main steam piping for the DB3 represented a total cost of about $5500 over 80% of which was the cost of the valves. Since for production reasons the valve industry makes all valves over 300 lbs. standard in C-Mo only and C-Mo is acceptable for all temperatures up to and including 900° F.—80% of the cost of the main steam piping does not change materially with changing steam conditions (up to 900° F.). System pressures should of course be selected to remain within USCG limits for 900 lb. standard flange and fitting ratings. This was done for the DB3 design and the more recent DN1 design.

The reduced pressure auxiliary steam services are identical regardless of the main unit pressure and temperature.

Smoke Elimination

The DB3 design cargo vessel has the new high velocity smoke stack specified as did the DN1 design and the modified P2-SE2-R3 passenger liner. Recent wind tunnel tests indicate that this stack design should eliminate most of the smoke soot and noxious gas nuisance that plagues ships. The stack calls for a minimum gas velocity of 4000 fpm at normal power with an annulus ring to assist by discharging a high velocity stream of air at about 7500 fpm for special conditions. Two fans of about 20 HP each are required and their controls are to be located on the bridge.

Results of the Economic Study as Shown by Bids on Design P2-S1-DN1

The foregoing discussion has been based on design studies made over a period of time without any real way of checking the validity of these studies. Recently, however, the American President Lines advertised for bids for 5 round-the-world vessels and asked for bids on two sets of steam conditions, namely, 600 lbs.-850° and 850 lbs.-900°. The guaranteed fuel rate for the 600 lbs.-850° condition was specified at .575 lb./SHP-Hr under some well defined conditions. The bidder was to state the fuel rate he would guarantee for the 850 lbs.-900° cycle under the same conditions. The price differential between the two cycles was bid at $130,000. The quoted fuel rates I am not at liberty to divulge, but we can make some interesting calculations.

The annual carrying charges on $130,000 are $12,660 at 9¾% (5% depreciation, 5% Ins., 3½% Int.) or $11,530 at 8⅞% (same with 1¾% Interest) with oil at $2.54 per bbl., 12,500 SHP, 60% sea time each, .01 lb. of fuel per SHP-Gr is worth $5060 per year. To break down even then the 850-900 cycle would have to obtain a fuel rate of .025 lb. per SHP-Hr less than the 600-850 cycle. This would be a rate of .575-.025 .550. I have calculated a fuel rate based on manufacturers' quoted efficiencies and obtain a fuel rate under the specified conditions of .540. Assuming then that the price of oil remains at its present level or continues upward, the 850-900 cycle is the most economical. Please note that the bid price of $130,000 is almost 3 times the difference indicated by figure 2. I believe the bidders have added considerable margin to allow for unknown contingencies and that if several 850-900 installations were made the price differential would approach that shown in figure 2.

A factor not to be overlooked is that in the case of a subsidized vessel the operator would pay only the unsubsidized percentage of the additional cost and make the entire fuel oil saving. Assuming a 35% subsidy the financing charges at 8⅞% would be $7500 per year and the fuel saving with a .540 fuel rate would be $17,700 per year or a net saving to the operator of $10,200 per year for using the 850 lbs.-900° cycle.

There are undoubtedly many advocates of other types of propulsion such as diesel or turbo-electric. These have both been studied and on the basis of the study it was found that the turbo-electric drive was considerably more costly than the geared turbine drive so unless some special problem such as port use of the main unit were to be considered the turbo-

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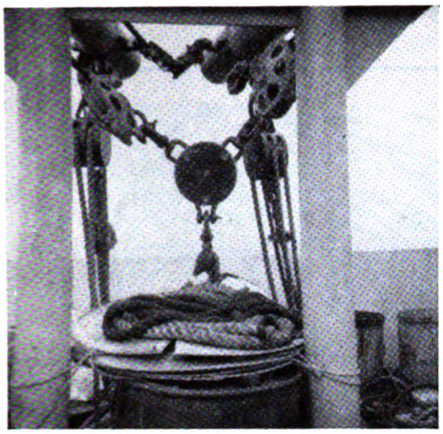

NON-FOULING CARGO HOOK

"Blacksmith Shop" Cargo Hook Adds New Safety Features

A modernization of the "Seattle" Cargo Hook, or "Blacksmith Shop" as called by longshoremen and sailors, has been in use for 6 months on the reefer hatch of the ms CLOVE HITCH, in the Alaska trade and is reported receiving praise from winch drivers and port captains.

The ring of the older type hook has been replaced by a weighted center section so that this assembly is about equal to the combined weight of the standard hook and the 75 lb. ball that is commonly used on various electric and steam winches, when sling boards are not required.

The design of the new hook assembly is such that the slack line can not interfere with the hook, which fact causes the Oriental and Australian longshoremen to shackle the top swivels together, thereby preventing proper flexing of the runners and causes speedy breakdown and early replacement.

This new hook can be tight lined in any of the three positions without putting a side strain on the swivels. When pulled under the hatch coaming to pick a load from the wings the hook comes clear without any assistance, a safety factor in its favor insofar that many accidents have been caused in freeing the older type hooks.

A patent application under the title of "Non Fouling Cargo Hook" has been entered in the U. S. Patent Office, by the inventor Thomas P. Huden, who has been an engineer on various motor ships sailing out of Seattle and other Pacific Coast ports since 1906.

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Modern Power Plant

(Continued from Page 56)

electric drive could not possibly be competitive. It has been claimed that the turbo-electric drive permits the utilization of higher temperatures than is possible with general turbines thereby permitting a more advantageous heat cycle. However, with present day practice, no basis can be found for this claim since improvements in the geared turbine design have placed it on the same basis as the turbo-electric in regard to pressures and temperatures.

The studies which considered diesel propulsion have indicated very clearly that the prime reason very few diesel merchant vessels are considered in the U. S. is the first cost. Every time bids have been requested for the same vessel with an alternate for diesel propulsion the diesel vessel has been more expensive. The extra cost is usually modest being only about $100,000 for a 2½ million dollar vessel but that represents $10,000 a year financing charges and with the relative prices of bunker and diesel fuel the diesel has been unable to overcome this initial handicap. However, with the present trend of increasing fuel prices it should be noted that the differential is changing between Bunker and Diesel fuel. The actual price difference is almost the same as it was before the war but the percentage difference is quite changed. We are therefore approaching the same situation as the Europeans where the major portion of the price of fuel is transportation and consequently the prime mover using the least quantity of fuel will be favored. All that can be said to the advocates of diesel propulsion is to bring down the cost and then diesels will be installed.

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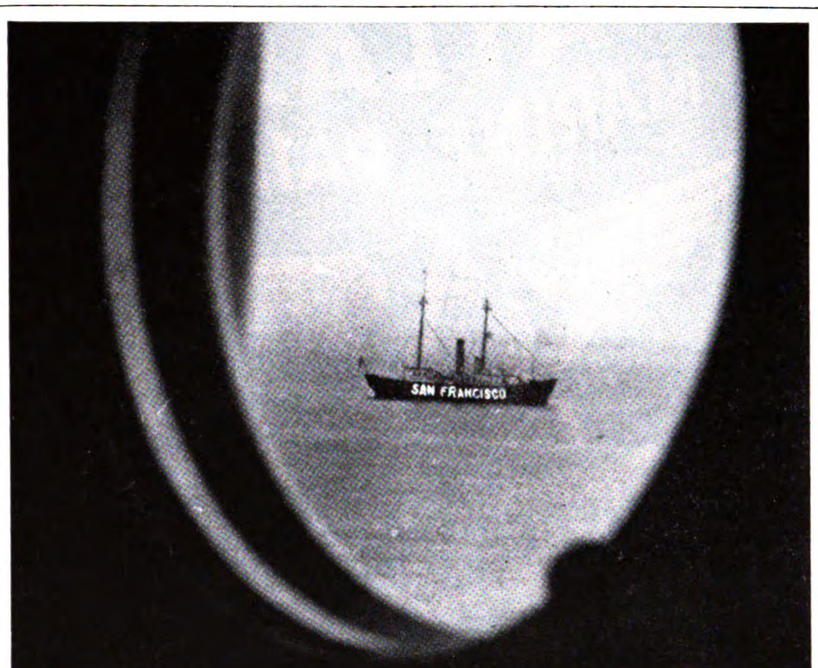
New Cargo Containers Used in New Orleans

Steel cargo containers, which port commission and barge line officials said were being used for the first time in export traffic in New Orleans, were loaded aboard an Alcoa Steamship Co. vessel during December.

The containers, filled with drugs for Latin America, arrived in New Orleans from Memphis, Tennessee, aboard a Federal Barge Lines vessel, and were transferred directly to the ship by means of a floating derrick.

There were two steel containers and they are being shipped to La Guaira, Venezuela, by the Plough Sales Company.



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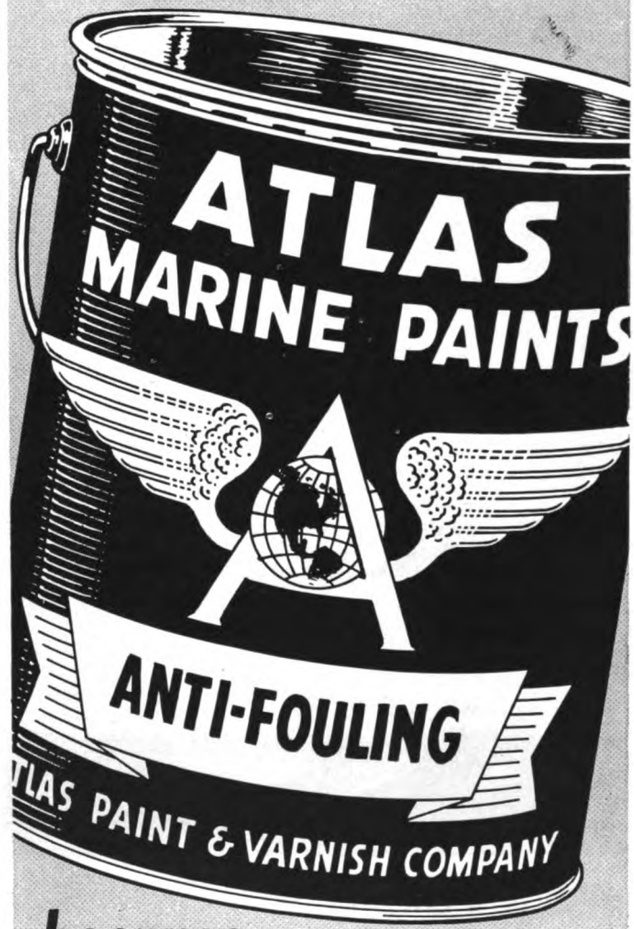

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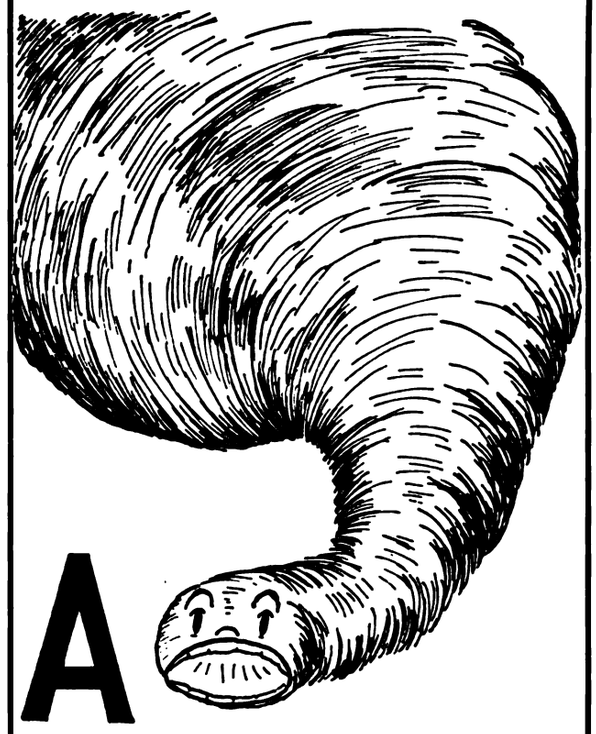

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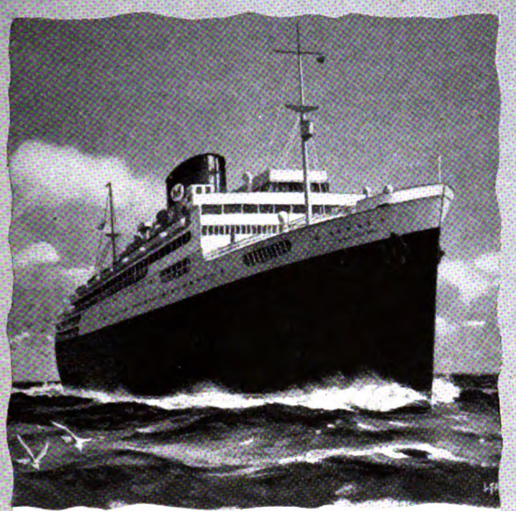

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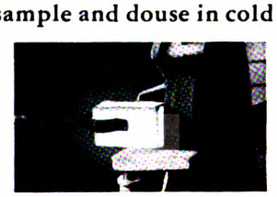
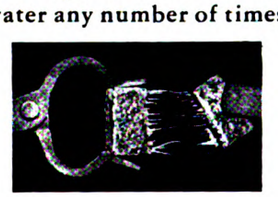


Brickseal resists abrasion. Force the sample brick, either hot or cold, against an emery wheel and see the difference on the coated and uncoated sides.



Brickseal is a superior mortar for fire walls. Try to pull the sample bricks apart after they are heated to 2200°.

Write today for a free sample. No obligation, of course.

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EQUIPMENTALK

Marine Manufacturers Tell Their Stories . . .

LIFE Features Hart & Burns Navicote Copper Paint

A small wooden sailing craft, with irregular splotches on its bottom, is held aloft by a crane in a picture in LIFE Magazine of January 5 and beneath is a caption: "Paintmakers Hart and Burns inspect boat after three months in water. Of seven paints, only their new formula completely repelled barnacles."

These paint makers are L. A. Hart, president, and Arthur E. Burns, Jr., vice president of Hart & Burns, Inc., Riverside, California, and Dallas, Texas, manufacturers of "Durahart" protective coatings, and they are inspecting, in the picture, a boat which was placed in barnacle-infested waters of San Diego three months previously freshly painted with seven different paints designed to keep off barnacles and other marine organisms.

When the boat was taken from the water, the LIFE story says, "barnacles and other marine forms had grown several inches thick on all the painted patches except those protected by a brand-new kind of anti-fouling paint.

"This new paint, called Navicote Copper, resembles the secret U. S. Navy anti-fouling paints developed during World War II which kept U.S. ships at sea two or three years, while the Japanese had to drydock their vessels for scraping every few months. It was compounded by Arthur E. Burns, who helped develop the Navy's paint. With it, Burns hopes to reduce sharply the shipping industry's annual $100 million bill for scraping the lowly barnacle off its collective bottom."

The article explains that Navicote Copper paint keeps barnacles from ship's bottom by exuding a poison contained in tiny particles of the paint. Navicote dissolves slowly and constantly exposes new poison particles.

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Sporry Radar Installed Aboard ss PACIFIC TRANSPORT

Pacific Transport Lines, San Francisco, recently installed one of the Sperry Gyroscope Company's new Marine Radar equipments aboard its flagship, the ss PACIFIC TRANSPORT, commanded by Captain K. H. Jorgensen.

The Sperry company developed this radar during two years of operational research. It is a 3 centimeter unit with several outstanding features, including:

Variable electronic range marker. "Center expand."

Five range scales; one mile, two miles, six miles, fifteen miles and thirty miles.

True relative presentation, with automatic synchronizing.

Echo box for shipboard monitoring of the radar system.

Minimum range of less than 80 yards.

12-inch diameter viewing scope.

All eight of these features are standard with the Sperry radar sets.

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Gamlen Chemical Surveys Its Service Organizations

T. J. Faver, division sales director of Gamlen Chemical Company, upon completion of his extensive survey of Gamlen service organizations on the Atlantic Seaboard and Gulf Coast, has announced that all facilities are geared to the "brass-tacks" problems of the post-war years. Mr. Faver personally surveyed conditions in 15 key ports.

Coincidental with his return to the New York office it was announced that the Gamlen Chemical Company had purchased a warehouse building at 454 Second Street, Hoboken. This building will be used to store complete stocks of Gamlen chemicals, and trucking facilities will be maintained to expedite deliveries in the New York-Hoboken area.

The company has appointed I. R. Whiteman to its staff of application engineers serving the marine industry. Mr. Whiteman, who is located at Gamlen's New York office, 11 Broadway, comes to the company with a background of maritime experience, having been associated with the Army and Navy Munitions Board, Brooklyn Navy Yard, and the U. S. Maritime Commission.

Nordberg Appoints Phillips Assistant Export Manager

Howard L. Phillips has recently been appointed assistant export manager of Nordberg Mfg. Co. Mr. Phillips comes to this position with several years experience in heavy industry export and in field sales engineering.

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T. S. Petersen New President Standard of California

Two important actions have been taken by the board of directors of Standard Oil Company of California to broaden the executive administration of the corporation, chairman of the board H. D. Collier announced.

A new office of vice chairman of the board was created with R. G. Follis, president since 1945, advanced to that position.

T. S. Petersen, vice president and director, was advanced to the position of president to succeed Mr. Follis.

Mr. Collier explained that the rapid and extensive development of both the company's domestic and foreign operations with attending unprecedented and complex problems had made these administrative moves most desirable.

Mr. Follis, a graduate of Princeton University, began work with Standard Oil Company of California in 1924 at its Richmond refinery.

Mr. Petersen's career with the company started in 1922 at Portland, Oregon, and has been largely identified with marketing activities.

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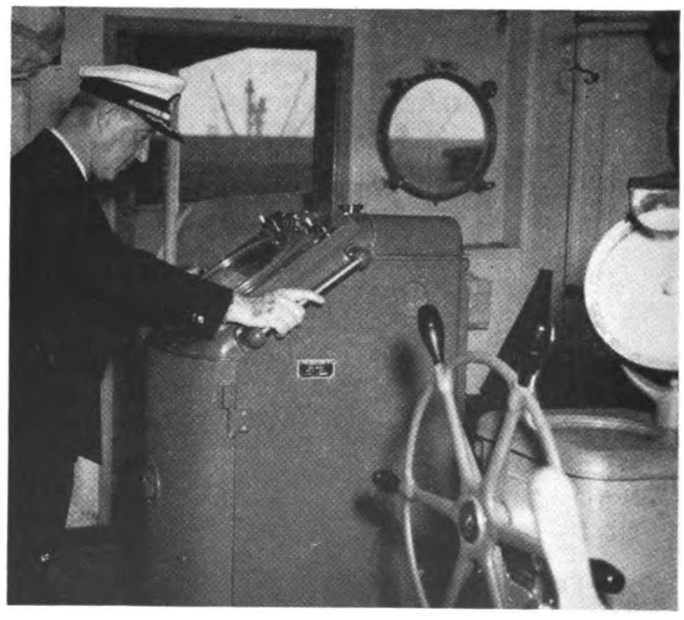

CAPTAIN K. H. JORGENSEN of the SS PACIFIC TRANSPORT at the new Sperry Radar installed aboard his vessel. A Sperry gyro-pilot is at the captain's right.

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J. M. COSTELLO Supply Co., Wilmington, Calif., invited the marine fraternity to the grand opening of its new wire rope rigging loft, featuring a supply of wire rope from the Jones & Laughlin Steel Corp. Shown here are JOE COSTELLO and AL BORO flanking a reel held aloft by Costello's new electric hoist.

SS AVALON Receives Boiler Check-Over

The ss AVALON, one of two large steamers operated by the Catalina Island Steamship Line, Inc. (formerly the Wilmington Transportation Company) in the Los Angeles-Catalina Island trade, went through a new experience recently in having her four Babcock & Wilcox boilers cleaned chemically while tied up for winter check-over at her Wilmington berth. The job was performed by Marine Solvents Service Corp., which employed its new barge, ALBERT O. PEGG, JR., lashed alongside.

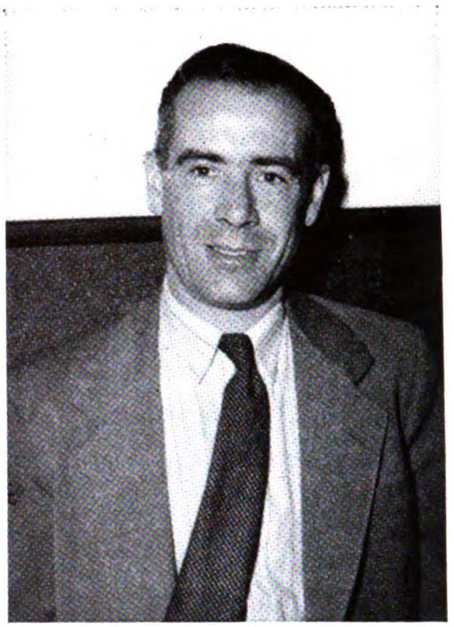
The AVALON is a 1500-passenger steamer which cruises at 13.5 to 14 knots on her daily run across San Pedro Channel to famed Catalina Island. Always before, her boilers had been cleaned mechanically. According to Bill Scott, port engineer for Catalina Island Line, the advantages of a controlled chemical cleaning loomed large, and the job was undertaken, to be completed in 36 hours' time by an experienced crew from the recently formed Marine Solvents organization.

Accordingly, the barge was secured alongside. While steam was being generated on the barge, and chemicals required were being blended and heated aboard to operating temperature, boilers of the AVALON were prepared for pre-inspection of condition of scale and other deposits and the charge of cleaning solvents.

Chief Engineer Wm. J. Stack, who has served Catalina Island Line since 1924, stayed below to observe the procedure as the single rubber-hose line was drawn into the AVALON's fire-room and then connected first to the after port boiler, first to be cleaned in the sequence of four. Within minutes thereafter, hot water from the barge was injected into the boiler (whose vintage is 1923) and this then was followed with a charge of the solvent.

Meantime, other boilers were prepared, and shortly they were purged by the controlled chemicals. The complete job was finished, including a scale and silt removal of the headers, within a matter of hours, under personal supervision of Albert O. Pegg, president and George McCoy, general superintendent of Marine Solvents Service Corp.

With her B & W burners supplying heat from Associated Oil's bunker C fuel to the boilers, a full head of steam will be up quickly to drive the AVALON's two 1400 hp. triple-expansion reciprocating Globe Iron Works steam engines at their rated 106 rpm. Operating steam pressure is 165 lbs. at 300 degrees.



JOHN I. MacNICHOL, Manager of Pacific Marine Supply Company's Engine Department.

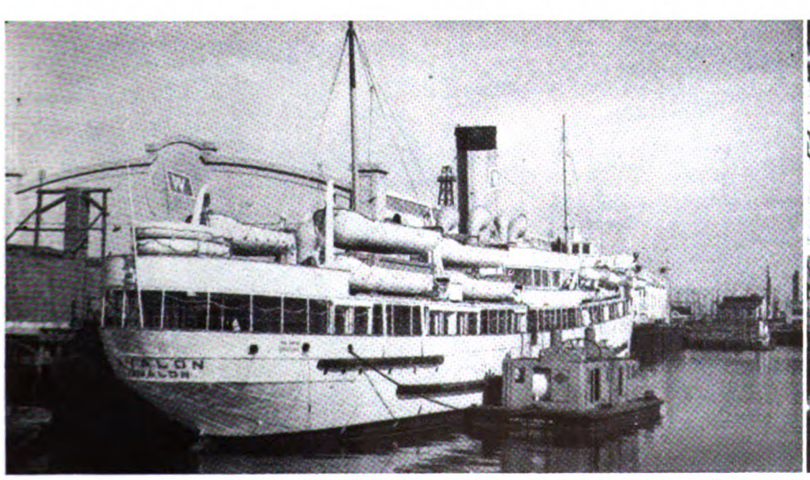
John MacNichol Rejoins Pacific Marine Supply

John I. MacNichol has rejoined the Pacific Marine Supply Company, Seattle, to become manager of the company's engine department. Prior to service with the Navy during the war, MacNichol was with the pioneer west coast and Alaska marine supply firm in the engine department and in the fire-fighting division. Engaged as marine engine salesman during the past two years he has acquired a wide range of friends among people in the marine trade at Pacific Northwest ports.

In addition to Universal 100% marine motors, which Pacific Marine Supply Company has handled in the Northwest and Alaska for 25 years, the engine department distributes such well-known marine lines as Bendix Marine Depth Sounders, Goodrich Cutlass Rubber Bearings, and other familiar marine accessories.

THE ss AVALON, left, one of Catalina Island Steamship Line's steamers from Los Angeles to Catalina Island, tied up for her winter check-over at the Wilmington berth. Drawn alongside is the barge, ALBERT O. PEGG, JR., floating equipment used for controlled chemical cleaning of boilers by the Marine Solvents Service Corp., Wilmington.

Right, in the fire-room of the AVALON are four Babcock & Wilcox Co. boilers. Here, GEORGE McCOY, left, of Marsol, and Chief Engineer WM. J. STACK of the AVALON are seen at the after port boiler, where the controlled cleaning operation commenced. McCOY's hand rests on the hose leading from the barge alongside. Chemicals progress through entire boiler assembly in sequence.



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ATLAS MARINE PAINTS are now distributed on the eastern seaboard . . . according to an announcement by E. W. WHITTEMORE, Sales Manager and General Partner of the Atlas Paint & Varnish Company of Los Angeles.

Eastern Distributors for Atlas Marine Paint

Atlas Paint & Varnish Company of Los Angeles has appointed five additional distributors for Atlas Marine Paints. This was announced by E. W. Whittemore, sales manager and general partner of the company, upon his return from an extensive tour of the east.

Northern distribution will be handled by the Maxwelton Company of Mystic, Connecticut. Powers Outboard Motor Sales of Richmond, Virginia will cover the Virginia and Washington, D. C., territory.

Mount Pleasant Boat Building Company, Mount Pleasant, South Carolina, has been assigned to South Carolina. Brunswick Marine Construction Company of Brunswick, Georgia, will represent Atlas in Georgia and North Florida, and the Phillips Hardware Company of Miami, Florida, will handle the line in Southern Florida.

"The immediate success that greeted the introduction of Atlas Marine Paints on the Pacific Coast leads us to believe that a similar reception may be looked for on the eastern seaboard," Mr. Whittemore said, as he announced the appointment of the new Atlas distributors.

A leader in the Atlas Marine line is their Gold Label Copper Compound for wooden boat bottoms which, it is asserted, offiers great protection against marine growth.

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George E. Swett Company, pioneer San Francisco marine engineering and sales organization, announces it has signed a $1,000,000 contract with Petroleum Engineering Company, Berkeley, to manufacture Watrola heaters for household and industrial use. The Grinnell Company will act as national distributors.

GERALD A. DUNDON, Vice President and General Manager of Pope & Talbot Lines, San Francisco, was guest of honor at a luncheon given recently following his arrival in the west coast city from his former post in New York. Members of the maritime press of San Francisco attended. Accompanying picture shows these Pope & Talbot men: CARL E. McDOWELL, Asssitant to the Executive Vice President; C. L. BUELL, General Freight Agent at Oakland; GERALD DUNDON and J. A. STEIN, Assistant Freight Traffic Manager.

California Naval Architects Hold High Attendance Record

"Low Temperature Air Conditioning on Ships" will be the subject of a paper to be presented by John F. Kooistra, San Francisco, west coast marine manager of the Carrier Corporation, Monday, February 16 before the northern California section of The Society of Naval Architects and Marine Engineers at San Francisco.

At the January meeting of the Section, a paper titled: "Lubrication of Main Propulsion Power Plants Aboard Ships" was presented by E. F. Griep, Standard Oil Company of California, and F. J. Hanly, California Research Corporation.

Members of The Society of Port Engineers, San Francisco, were present, by invitation, at the January meeting of the Naval Architects.

William B. Warren, American Bureau of Shipping, chairman of the Section, announced that membership of the group stood at 256, an all-time high.

H. G. Rethmeyer, Westinghouse Electric Corporation, reported as the delegate of the Northern California Section to the national convention in New York in November, and said the parent body was highly pleased with the growth and activity of the California group. It was announced by Les White, secretary, that the Section held the highest attendance record, percentage-wise, of all seven regional groups.

C. M. Peabody Joins Tait Stevedoring Staff

Charles M. Peabody, veteran Puget Sound stevedoring and terminal operator, has joined the operating department of Tait Stevedoring Company.

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Albina Engine Builds Steel Hulled Ferry

Launched in December the steel hulled ferry M. R. CHESSMAN was built at Albina Engine and Machine Works, Portland, Oregon, for the Oregon State Highway Commission. The new diesel powered, 180 feet long, craft will be put into service at the mouth of the Columbia river in April.

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Catalina Island SS Line New Name for Old Company

Catalina Island Steamship Line, Inc., is the new name of the Wilmington Transportation Company, Wilmington, California, it is announced by Carl F. Fennema, vice president and general manager. This line operates passenger steamers to Santa Catalina Island and has a fleet of towboats and lighters for general service in Los Angeles and Long Beach harbors.

THEY ASSIST WITH TANKER RECOMMISSIONING PROGRAM. Left to right, BERT THOMPSON, JACK NEILSEN, Sales Engineers; WALLY L. ARDIES, Superintendent; KENNETH B. HALL, President, all of Western Machinery Corporation, Portland, Oregon. Formerly Hesse-Ersted Iron Works and renamed Western Machinery Corporation in 1945, the firm is supplying missing parts for deck winches and anchor windlasses abeard the recommissioned T2 tankers and for anchor windlasses carrying the Hesse-Ersted name plate aboard Liberty, Victory, C-1, 2, and 3, and C1-M-AV1 type ships. Air freight shipments to Atlantic seaboard repair yards have hastened ship delivery dates for some of the recommissioned tankers.

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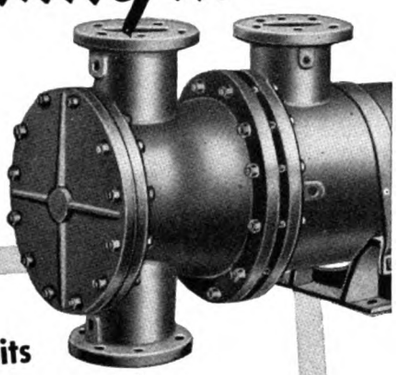
Beware of fouling...



Tube deposits can insulate your cooler against adequate heat transfer

DIMINISHING efficiency of your cooling equipment may mean that insufficient attention has been given to the fouling tendencies of fluids circulated.

Watch for this in determining your cooler design. Either fluid, by its very nature or through local conditions, may be the type to leave a heat resistant residue on the inside or outside of the tubes. This acts as an insulation against heat transfer. Result: diminishing heat transfer rate and increasing maintenance beyond practical limits!

Make sure *YOUR* cooler will *CONTINUE* to perform at specified capacity. That's the strong point of the Ross "CP" design. Through selection and arrangement of standard, mass produced parts to suit *YOUR* operating conditions, Ross "CP" Coolers embody a large factor of safety against the effects of fouling under normal and fluctuating conditions.

Ross heat exchange engineers will quickly determine for you: proper velocities to minimize residue; temperature ranges necessary to discourage precipitation of carbonate on the tube wall; and correct fluid to be circulated through the tubes. Contact any Ross office, or write *Ross Heater & Mfg. Co., Inc.*, (Div. of American Radiator & Standard Sanitary Corp.), 1401 West Ave., Buffalo 13, N. Y.

In Canada, write Horton Steel Works, Ltd., Fort Erie, Ont.

Details on Continuous Performance at Specified Capacity in Free Bulletin 5322

Write today!

ROSS "CP" COOLERS

will maintain highest heat transfer at lowest maintenance for your installation

CHOICEST MEATS AVAILABLE

★ **24 HOUR SERVICE**
any day in the year

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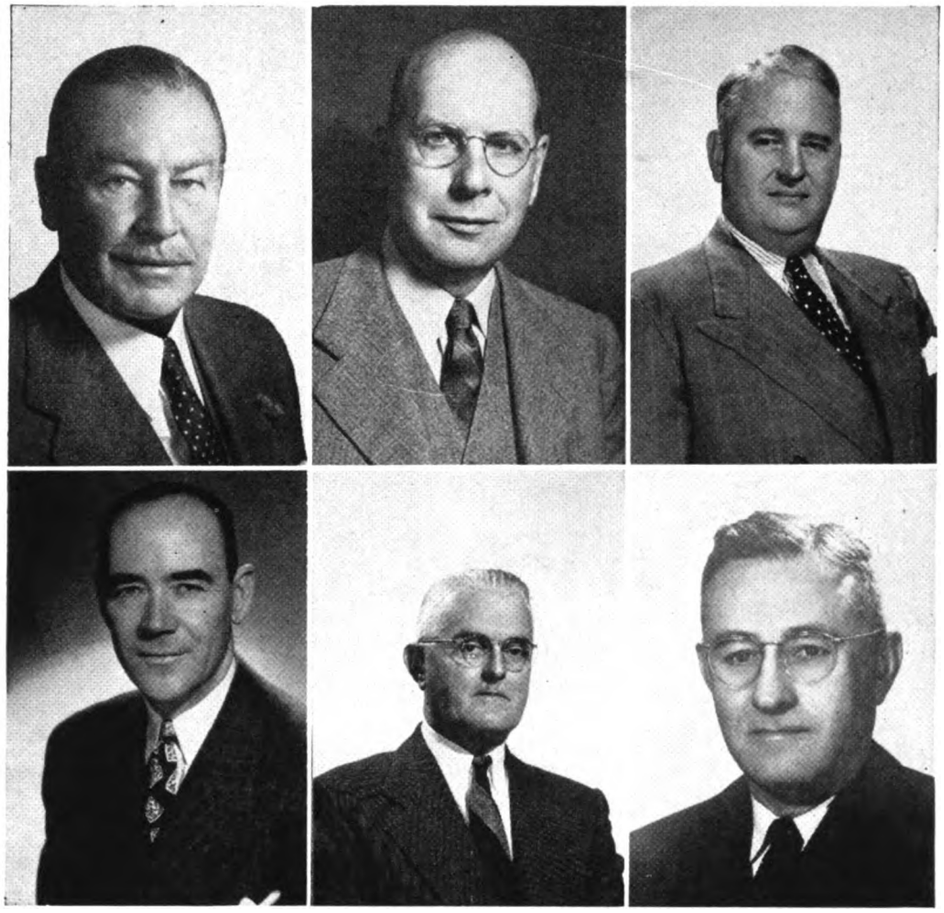


EXECUTIVES NEWLY-ELECTED by General Petroleum Corporation at the company's home office in Los Angeles . . . Top row, left to right, CLARENCE S. BEESEMYER and PHILIP S. MAGRUDER, Executive Vice Presidents; JOHN C. SAMPLE, Vice President.
Bottom row, ARTHUR J. DONNELLY, Vice President; GALE L. ADAMS, Vice President and Director; and CARROLL M. WAGNER, Director.

General Petroleum's Newly Elected Officers

R. L. Minckler, president of the General Petroleum Corporation, has announced the election of new officers for the company at their home office in Los Angeles.

Clarence S. Beesemyer and Phil S. Magruder, both vice presidents and directors of the company, with Mr. Beesemyer serving as director of marketing and Mr. Magruder as manager of the manufacturing department, have been elected executive vice presidents.

John C. Sample, former general sales manager, became a vice president as did Arthur J. Donnelly, industrial relations manager. Gale L. Adams, manager of the manufacturing department, was named a vice president and director; and Carroll M. Wagner, manager of the geological department, likewise was chosen a director.

‡ ‡ ‡

Model 31-A Fairbanks-Morse New Streamlined Diesel Unit

The new Fairbanks-Morse Model 31-A Marine Diesel Engine is a modern clean-cut streamlined diesel unit extending 15 feet in length, including the reduction gear and is 39¾ inches in width at its widest point. One of the outstanding features of the model is its unusual simplicity in diesel design, highlighting easy access to all functional parts for inspection, repair and service.

"This engine was so designed," said Tom Morris, sales representative for the Fairbanks, Morse & Co. in the Norfolk area, who handled the details for the installation of the Model 31 aboard the oil tanker BELLE HAVEN, "that a skilled engineer or machinist is not needed to make repairs. Anyone who can read a simple instruction sheet and knowing the proper direction for turning nuts and bolts to tighten or loosen them, has the necessary ability and experience to service the unit. Simplicity in design, construction, and operation with ready accessibility to all functional parts without having to dismantle the entire engine, greatly reduce former excessive labor and overhead losses and makes the unit a real moneysaver and maker."

The company reports that the engine's improved "En-bloc" construction insures powerful rigidity and perfect alignment of crankshaft and cylinders. Its single-casting cylinder block mounts the cylinders, crankshaft, camshaft, and injection pumps; and is not cored for water or oil passages, thereby assuring alignment as well as the eliminating of possible lubricating oil contamination by cooling water. It is an extremely smooth running engine.

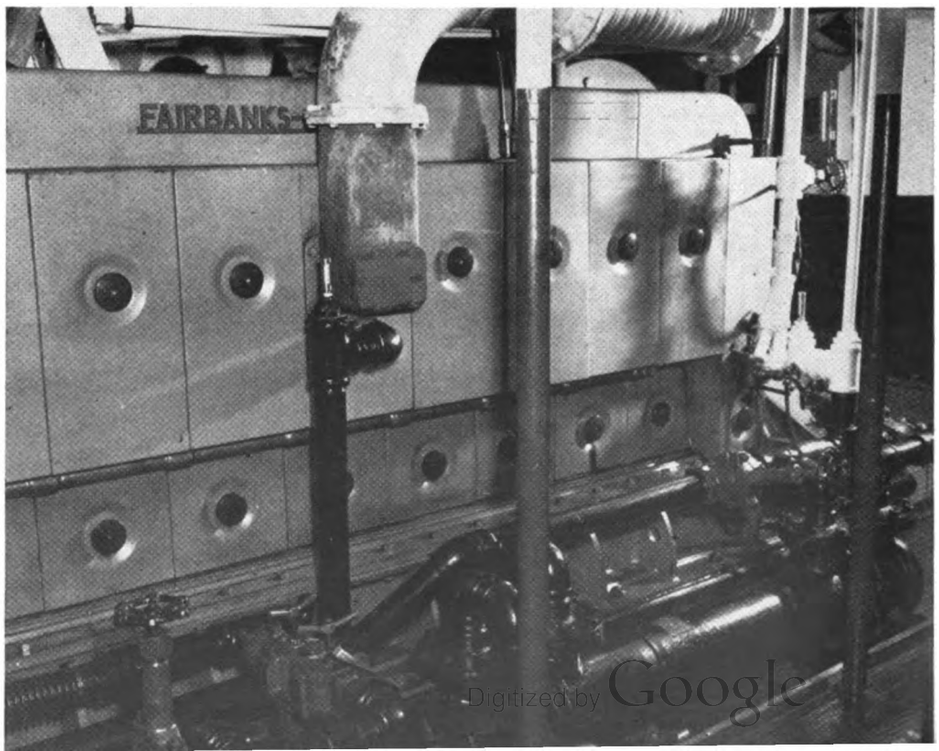
The engine's cylinder liners are not only removable, but interchangeable as well. They are a single-casting with an integrally cast, water-jacket, which guards the unit against water leakage due to jointed construction.

Another feature of the Model 31-A, Fairbanks-Morse engine is the interchangeability of its precision type bearings. The crankpin bearing shells are interchangeable with the main bearings as are the upper and lower halves. The shells can be removed easily for inspection or service. In addition, the bearings are of such large size that the connecting

(Continued on Page 64)

FAIRBANKS-MORSE MARINE DIESEL ENGINE . . . Model 31-A. The clean-cut, streamlined construction of the Model 31 Marine Diesel Engine, shown aboard the 110 foot oil tanker BELLE HAVEN, features easy accessibility to all functional parts of the unit without requiring the dismantling of the entire engine for inspection, service, or repairs. Sections of the unit are covered with large covers which can be removed piece by piece, without disturbing other parts, if servicing is necessary.

The BELLE HAVEN, a 110 feet long, 23 feet wide, 6 foot draft vessel, with a gross tonnage of 184 tons and oil storage capacity of 87,520 gallons, was formerly powered with a Fairbanks Morse marine Diesel engine, Model 35 D-10, 6 cylinders developing 210 HP at 360 RPM, and the new unit installed with its 7 cylinders and two-cycle construction has increased power efficiency to 245 HP at 720 RPM.



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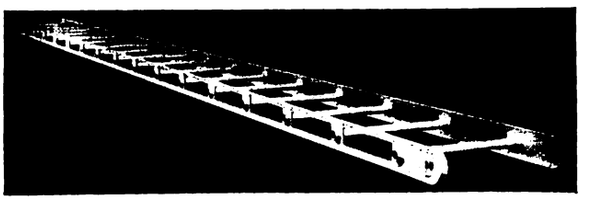

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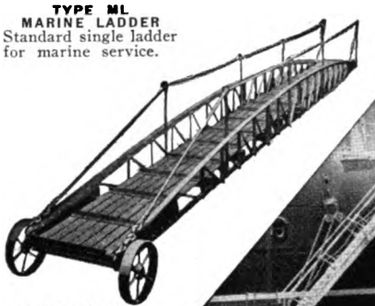

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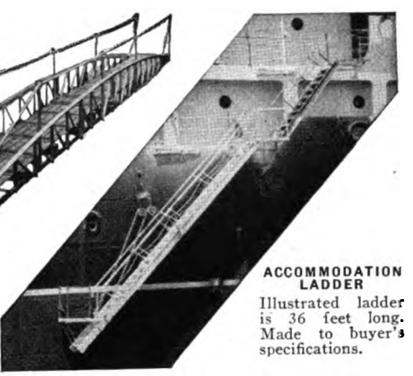

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DEMA Elects New Officers

Gordon Lefebvre, President of the Cooper-Bessemer Corporation, was elected the new president of Diesel Engine Manufacturers Association, at the Association's Annual Meeting, held in Chicago.

Otto H. Fischer, president of The Union Diesel Engine Co., and L. W. Metzger, vice president of The Baldwin Locomotive Works, were elected new vice presidents of DEMA.

Robert H. Morse, Jr., vice president and general sales manager of Fairbanks, Morse & Co., was reelected treasurer of the association and Harvey T. Hill was reappointed executive director.

Elected to serve two years on the board of directors were George W. Codrington, vice president of General Motors Corporation and general manager of Cleveland Diesel Engine Division; E. J. Schwanhausser, vice president of Worthington Pump & Machinery Corp.; A. W. McKinney, vice president of The National Supply Co.; Mr. Morse, and Mr. Metzger.

The following were elected to serve one year on the board: C. S. Herbert, executive vice president, Enterprise Engine & Foundry Co.; W. E. Corrigan, vice president, American Locomotive Co.; Robert E. Friend, president of Nordberg Manufacturing Co.; Mr. Lefebvre and Mr. Fischer.

The Annual Meeting, together with the DEMA engineers' session held on Dec. 9 and 10, comprised the most important and the most successful gathering that the Association has ever held. It was important because significant issues were discussed and dealt with; successful because real progress was made in the two days that the engineers and executives talked out their problems.

One of these was the growing seriousness of the situation with respect to supply and demand of Diesel fuel oil. To get an authoritative, first-hand picture of the situation, the DEMA personnel had as their luncheon guests some of the top men in the oil industry, who represented the marketing division of the American Petroleum Institute. They included A. W. Peake, president of Standard Oil Co. (Indiana); L. S. Wescoat, president of Pure Oil Company; P. E. Lakin, vice president of Shell Oil Co., Inc.; B. L. Majewski, vice president of Deep Rock Oil Corp.; and John Day, executive secretary of Western Petroleum Refiners Association.

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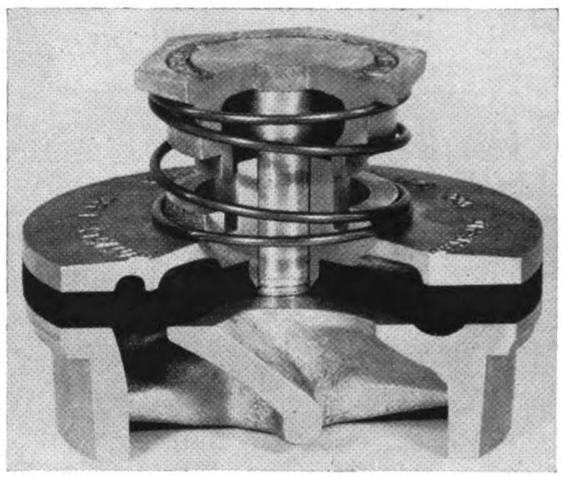

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Fairbanks-Morse Model 31-A

(Continued from Page 62)

rod bearing cannot be pulled through the cylinder liners. A flange in the connecting rod makes it possible to pull a piston without disturbing the bearings and likewise the connecting rod bearing can be removed without disturbing the piston. The bearings are of the precision type requiring no hand fitting or shims. In order to alleviate the danger of cracking or chipping, the bearings are made out of aluminum. The bearings are pressure-lubricated from one central system which feeds the oil automatically to all working parts of the engine.

The pistons have a solid flow of oil, under pressure, against the crown. This feature dissipates heat throughout the top of the piston and even in back of the compression rings thus assuring long life to piston rings and cylinder walls.

The single reduction gear is mounted at the factory on the same base with the engine to insure proper alignment and is included in its overall length. The company reports that the engine is deliberately built "oversize" to provide large reserve capacity designed especially for the Model 31-A engine. The reduction gear unit has its own lubricating system as well as a cooling system for oil.

A positive displacement blower provides air for scavenging and complete combustion reduces fuel consumption.

Fairbanks-Morse state that Model 31-A Diesel engine is operated by a system of extremely simple controls. A single lever controls the starting, stopping, and reversing of the engine without requiring endwise movement of the injection camshaft. When reversing, the only change in the control operation, is a small movement of the air-start cam by a positive linkage.

Fairbanks-Morse at present is producing Model 31-A in two sizes. It is being constructed in the 6¼"x9" size ranging in HP from a 5 cylinder, 175 HP unit to an 8 cylinder, 280 HP engine, and in an 8½"x11½" unit ranging in HP from a 5 cylinder, 300 HP engine to an 8 cylinder, 480 HP unit. The smaller unit operates at 720 RPM and is fitted with a 2:1 reduction gear turning the prop at 360 RPM. The larger engine operates at 525 RPM fitted with a 2:1 reduction gear turning the prop at 262 RPM. All the engines are direct-reversing.

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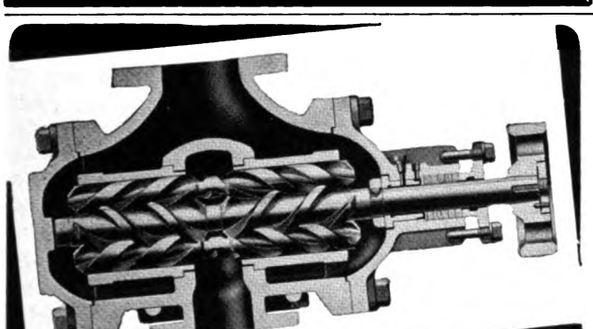

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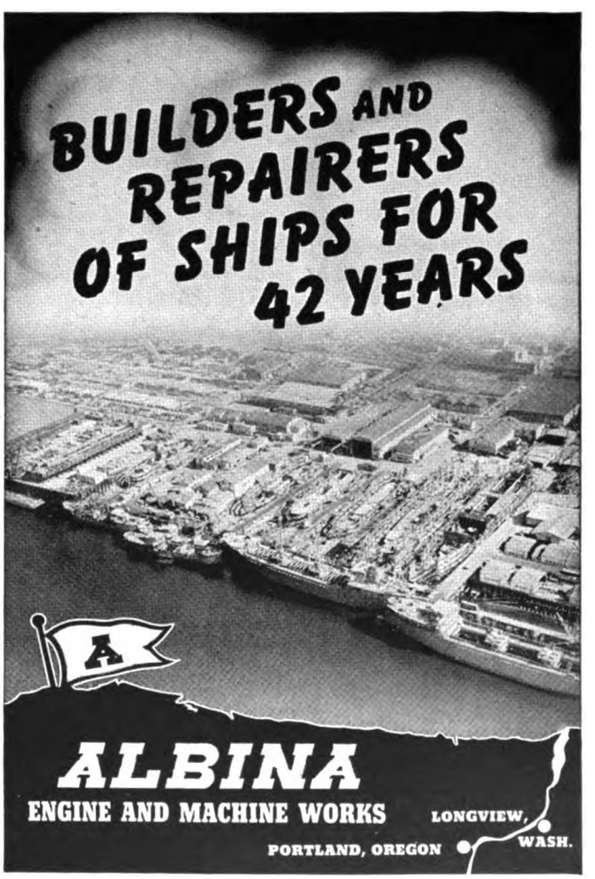

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Whitlock Cordage Announces West Coast Distributors

Whitlock Cordage Company, New York, announces Pedley-Knowles & Company, 134 Sacramento Street, San Francisco, is now exclusive distributor for the Whitlock products in the San Francisco and northern California area. Pedley-Knowles carries a complete stock of Whitlock rope, including the firm's well-known Fibore brand. In Southern California, Whitlock products are handled by Llewellyn Supply Company, Wilmington, and in the Pacific northwest by Fisheries Supply Company, Seattle and Portland.

⚓ ⚓ ⚓

New Price Protection Policy For GE Apparatus Department

In a move to maintain current price levels just as long as costs will permit, the Apparatus Department of the General Electric Company has announced a new price protection policy. It provides for a 20 per cent limitation on price increases, if any, and simultaneously permits the company on new orders to adjust prices within this ceiling to those in effect at time of shipment.

The policy covers all orders received December 5 and after, and applies to the company's apparatus lines, such as motors, generators, switchgear, turbines, control, power transformers, locomotives, etc.

⚓ ⚓ ⚓

National Marine Exposition Set for May 17-22

Latest progress report of the Third National Marine Exposition which will be held under the sponsorship of The Propeller Club of the United States in Grand Central Palace, New York City, the week of May 17-22, 1948, includes the names of many steamship and shipbuilding companies, manufacturers of electronic apparatus and marine equipment. Listing a few of the exhibitors: Agwi Lines, American Export Lines, Arpot & Co., Bethlehem Steel Corp., J. S. Coffin, Jr., Co., Condenser Service & Engineering, C-O-Two Fire Equipment Co., E. F. Drew & Co., Inc., General Electric Co., Murray & Tregurtha, Inc., National Malleable & Steel Castings, Owens-Corning Fiberglas Corp., Radiomarine Corp. of America, Republic Supply Co., John A. Roebling's Sons Co., George G. Sharp, Sims Pump Valve Co., Sperry Gyroscope Co., Submarine Signal Co., Welin Davit & Boat Co., Westinghouse Electric Co., Worthington Pump & Machinery Co., Xzit Sales Co.

GEORGE A. HORTON, JR., new vice president of International Paint Company (California) Inc., in charge of the company's west coast operations.

⚓ ⚓ ⚓

B & W Boilers Will Power $9,000,000 Hopper Dredge

Two high pressure Babcock & Wilcox boilers will power the turbo-electric hopper dredge that is to be built at a cost of $9,000,000 by Sun Shipbuilding and Dry Dock Company for use in New York harbor.

⚓ ⚓ ⚓

As of December 30, Welin Davit and Boat and its stainless steel affiliate, Alloy Fabricators, Perth Amboy, N. J., are no longer owned by Robinson Foundation, Inc., but became the property of American Steel and Copper Industries, Inc., 345 Madison Avenue, New York City, of which E. G. Jarvis is president. Announcement of this change was made by George E. Roberton, San Francisco, Pacific Coast manager of the Welin and Alloy firms.

⚓ ⚓ ⚓

E. F. Drew & Co., Inc., have announced the establishment of a new agency in Genoa, Italy, for the Ameroid system of boiler water treatment and other marine products. Instructions, service and materials are now available at William H. Muller & Co., S.A.I., Largo Zecca 10-5, Genoa, Italy.

A new marine towing record—6,350 miles—was established recently by Socony Vacuum Oil Company, Inc. in towing its war damaged tanker Mobilube from Subic Bay in the Philippine Islands to San Francisco Bay.

The saga of this record tow began on May 26, 1947 when a Standard Vacuum Oil Company tanker, the Yorba Linda, steamed out of Subic Bay with the Mobilube in tow behind two hundred fathoms of Tubbs Extra Superior Manila Rope. According to Captain A. L. Clark, the Mobilube's original skipper, the strain on the 12" Extra Superior was so great at times that the line calipered only 9⅝" circ. Extra Superior Manila once again proved its complete dependability and brought the tanker home safely 45 days after leaving Subic Bay.

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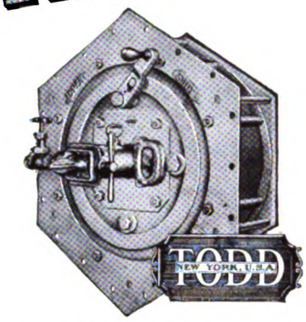

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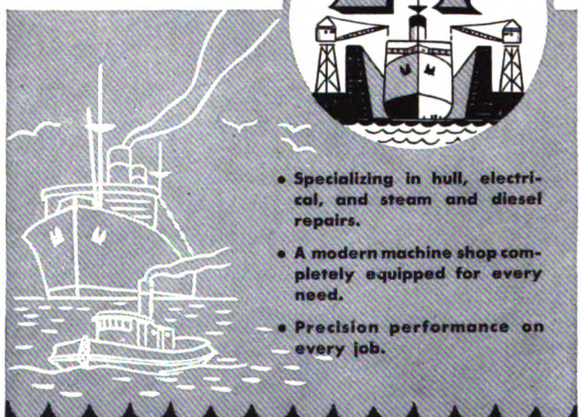

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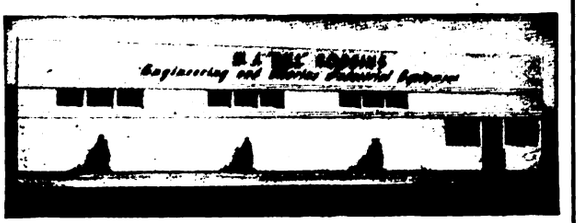

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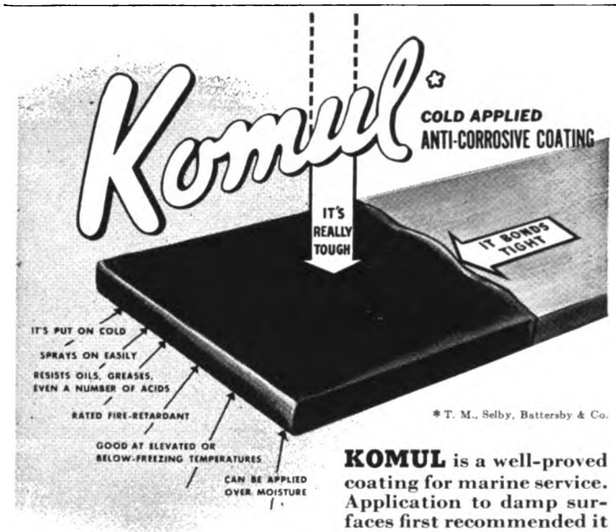

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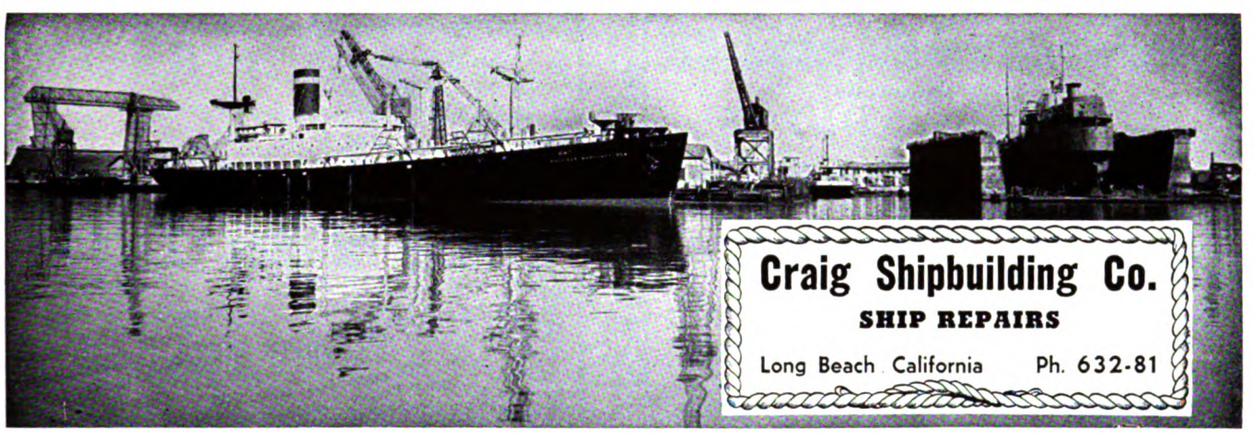

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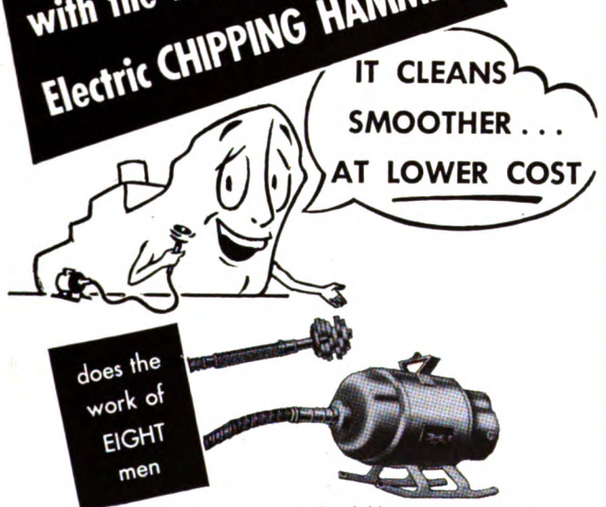

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ADVERTISERS INDEX

Albina Engine & Machine Works 65
Allen Pacific Company, Inc., Robert G. 73
Aluminum Company of America 7
Aluminum Ladder Company 63
American Brass Company 37
American Export Lines 63
American Hoist & Derrick Company, The 35
American Mail Line 71
American President Lines 76
Ames Terminal 69
Arnessen Electric Company 71
Atlas Paint & Varnish Company 58
Babcock & Wilcox Company 19
Baier & Associates, L. S. 76
Baker Dock Company 75
Bird-Archer Company of California 74
Brickseal Refractory Coatings 59
Brod & McClung 72
Catalina Island Steamship Line, Inc. 74
Cavanaugh Machine Works 72
Central Maritime Contracting Company 70
Chesapeake & Ohio Railway Lines 10
Columbia Machine Works 73
Commercial Ship Repair 75
Consolidated Services, Inc. 63
Cordes Bros. 74
Costello Supply Company, J. M. 73
Craig Shipbuilding Company 71
Crane Packing Company 45
De Boom Paint Company 55
De Laval Steam Turbine Company, The ..... Inside Back Cover, 65
Dravis Engineering & Machine Works 70
Drew & Company, Inc., E. F. 1
Duke's Packing Company 47
Everett Pacific Shipbuilding & Drydock Company 68
Foster Wheeler Corp. 9
Frickie, James H. 76
General Engineering & Dry Dock Company 72
Gladding, McBean & Company 75
Gow, Inc., Alexander 74
Griffiths & Sprague Stevedoring Company 70
Guralnick, Morris 76
Hanson, H. C. 76
Harbor Supply Company 57
Harris, Manly S. 75
Hart & Burns, Inc. 14
Hendry Company, C. J. 12
Heuck Corporation, Ed 45
Hickman Engineering Company 65
Hiller, Paul W. 76
International Nickel Company 17
Isherwood & Company, Ltd., Sir Joseph W. 76
Kearfott Company, Inc. 75
Long Beach Marine Repair Company 69
Long Beach, Port of 49
Lubald Company 15
Luce & Company 61
Marine Electric Company (Portland) 67
Marine Electric Company (San Francisco) 73
Marine & Industrial Supply, Inc. 76
Marine Marketing Company 67
Marine Service, Inc. 74
May & Smith Company 73
Moore & Company, C. C. 19
Moore-McCormack Lines 59
Morrison & Bevilockway 73
Nordberg Manufacturing Company ..... Front Cover, 3
Norgaard & Clark 76
Northwest Instrument Company 75
Northwest Marine Iron Works 71
Northwest Ship Repair Company 74
Nystrom, E. W. 76
O'Donnell Copper Works, E. M. 75
Oxi Corporation 8
Pacific Chemical Company 63
Pacific Marine Refrigeration Company 75
Pacific Marine Supply Company 65
Pacific Salvage Company, Ltd. 49
Pilot Marine Corp. 69
Plymouth Cordage Company 6
Pope & Talbot Lines 47
Puget Sound Freight Lines 74
Puget Sound Navigation Company 75
Radiomarine Corporation of America 21
Refractory Coatings Company 52
Republic Electric Company 72
Robbins, W. J. "Bill" 69
Roebling's Sons Company, John A. 5
Ross Heater & Manufacturing Company, Inc. 61
Rothschild International Stevedoring Company 75
Seaboard Machinery Corporation 13
Seattle Marine Surveyors 75
Seattle, Port of 52
Selby Battersby & Company 70
Sherritt & Headman, Inc. 68
Sherwin-Williams Company 2
Sims Pump Valve Company, Inc. 64
Socony Vacuum Oil Company, Inc. ..... Inside Front Cover
Southworth Company, Herb L. 73
Sperry Gyroscope Company, Inc. 41
Standard Oil Company of California 11
Sumco Products, Inc. 22
Sweetin Company, J. L. 75
Swett & Company, George E. 67
The Texas Company ..... Outside Back Cover
Thorpe & Son, Inc., J. T. 73
Todd Shipyards Corporation (Combustion Equipment Division) 68
Tubbs Cordage Company 69
United Fruit Company 4
Weeks-Howe-Emerson Company 72
Western Asbestos Company 67
Western Machinery Corporation 68
Western Ship Service Company 58
Willamette Tug & Barge Company 76
Wilmington Engineering Service Company 74

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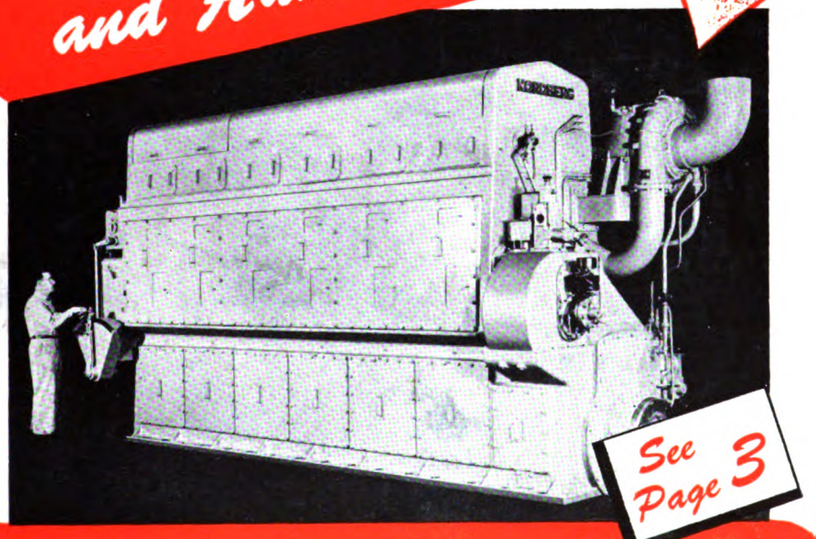

See Page 3

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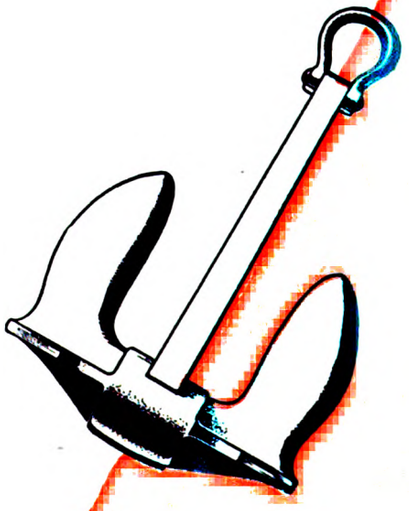

MARCH 1948
Volume 43 • Number 3

EDITORIAL INDEX ON PAGE....31
ADVERTISERS' INDEX ON PAGE 86

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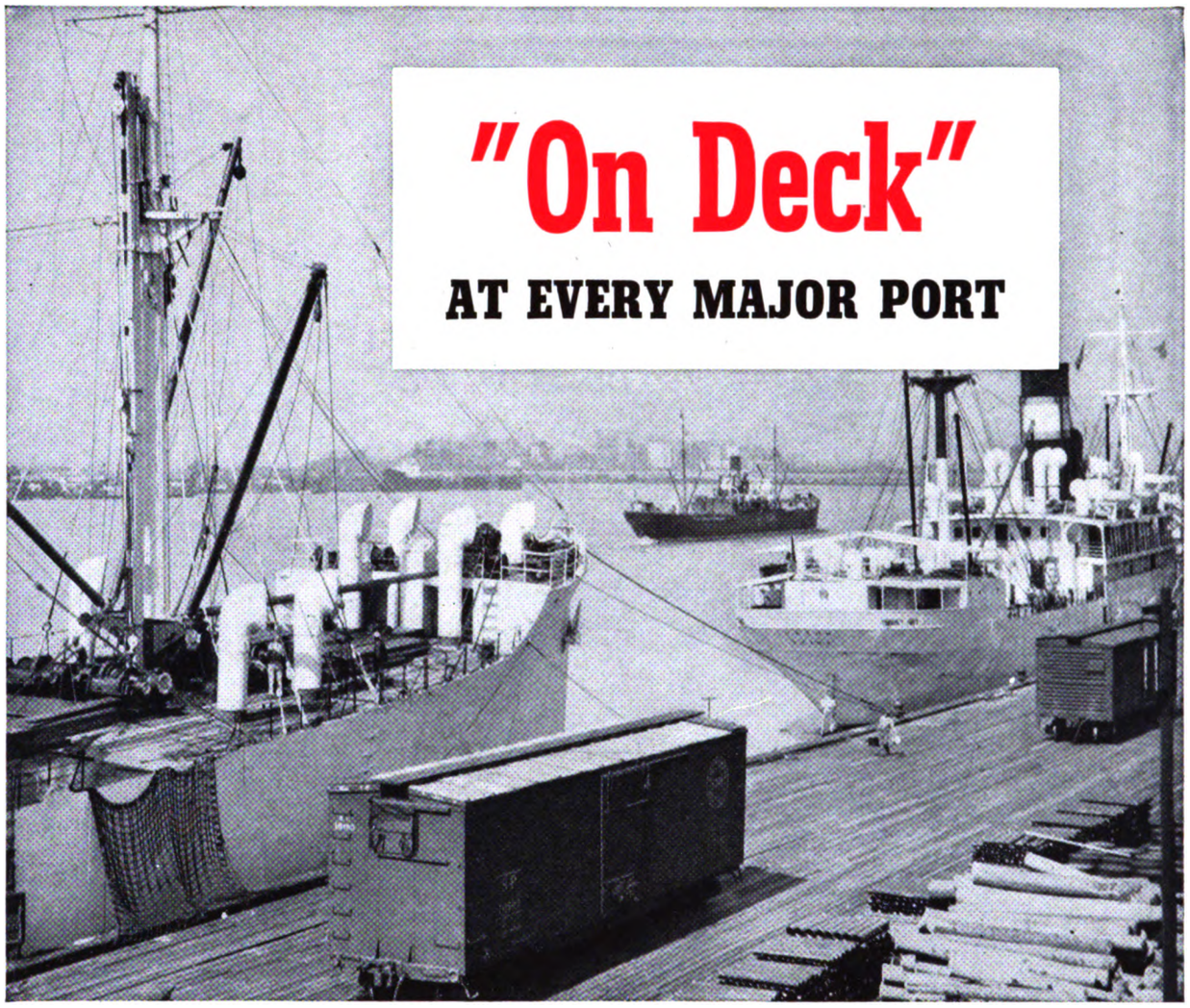

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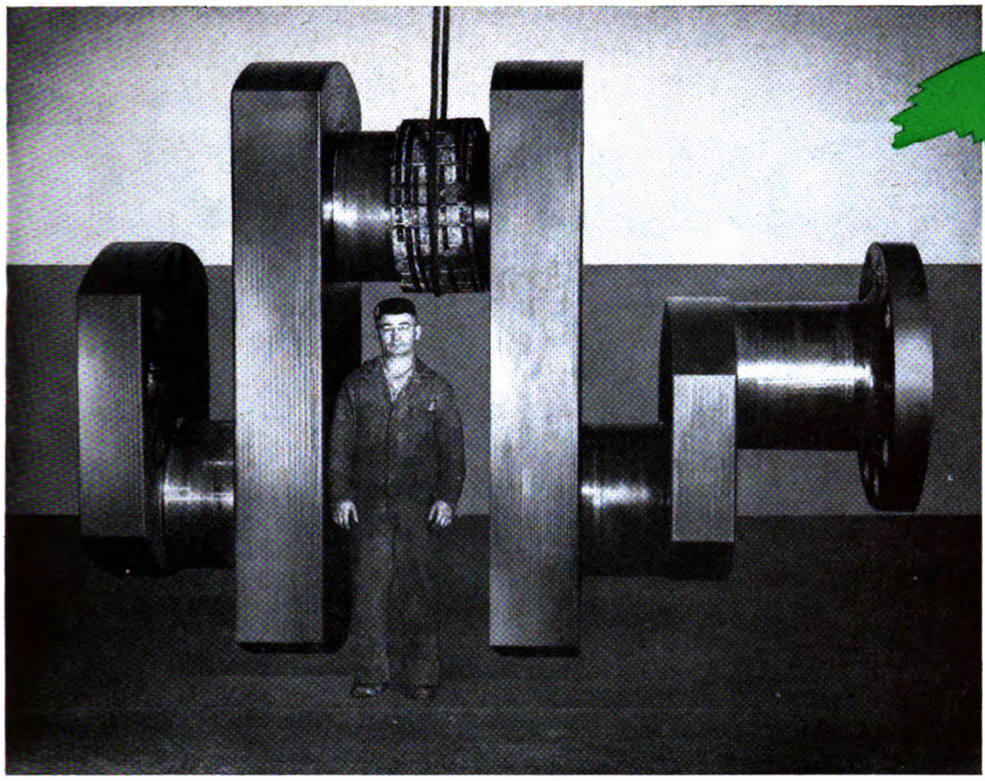

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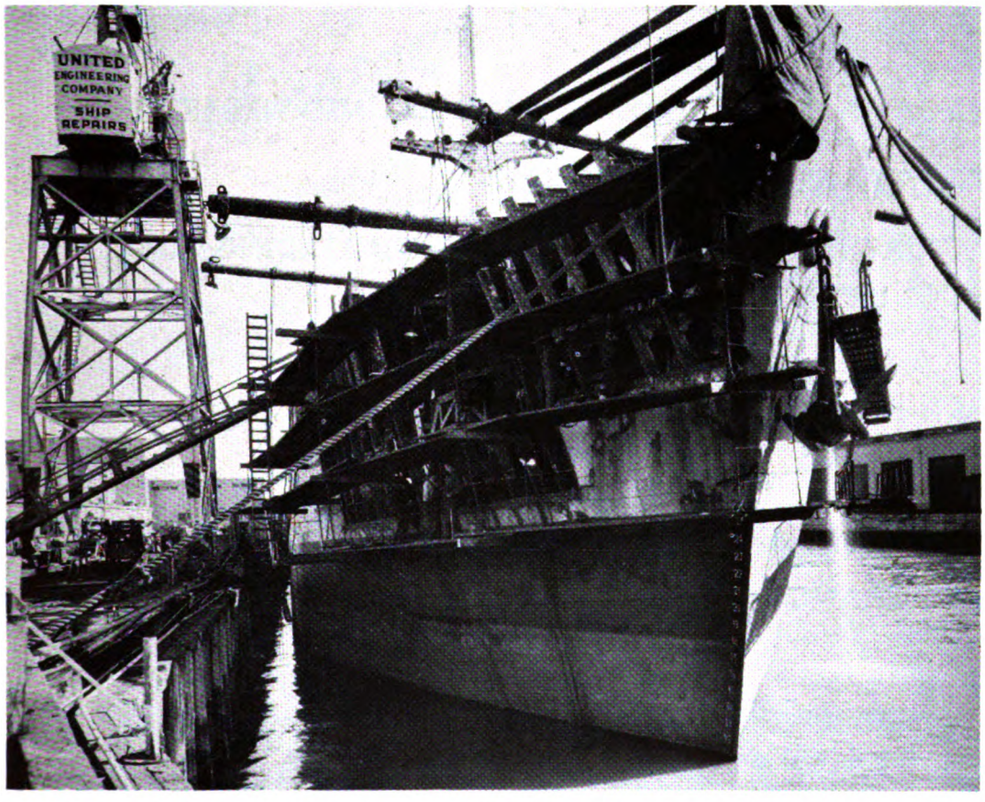

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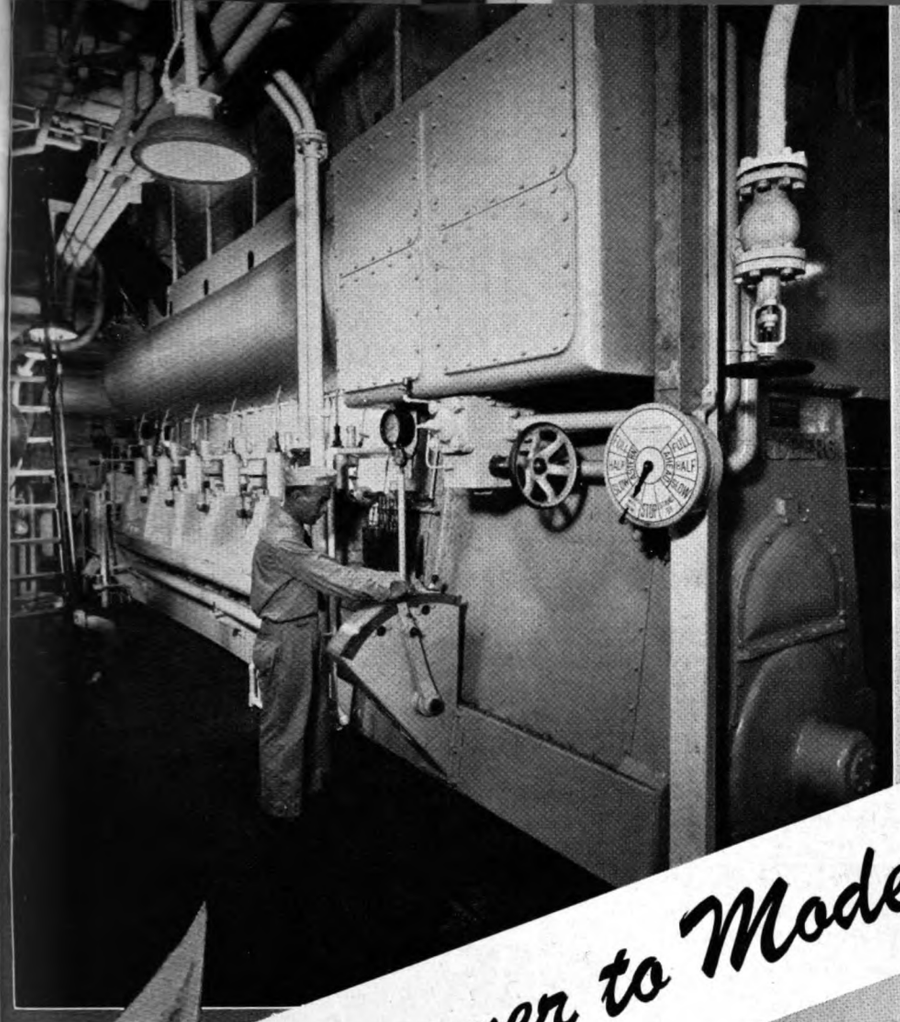

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Whatever your propelling needs, whether an engine of 165 horsepower or one of 8500 horsepower, there is a Nordberg Diesel that will give the performance that meets today's shipping demands.

BUSCH-SULZER

A DIVISION OF NORD

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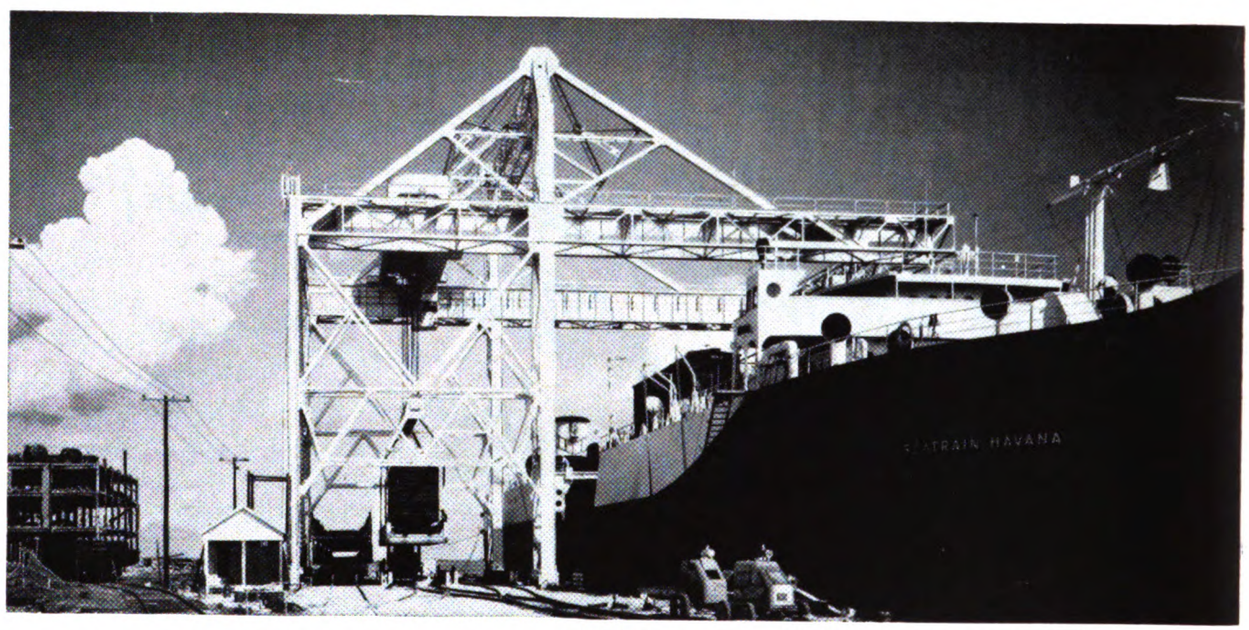
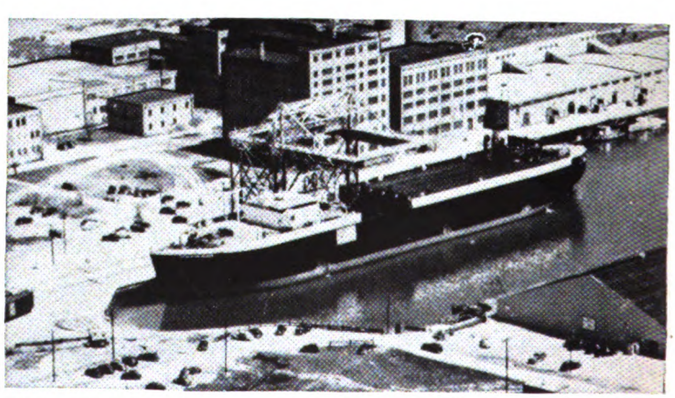
"CAN'T BE DONE

BUT FIRST SEATRAIN



The 125-ton crane used by Seatrains, Inc. to unload railroad freight cars is shown in operation at Texas City, Tex. The crane control equipment was completely replaced by G-E marine service three months from the date it was destroyed.

The explosion destroyed the crane control house with hundreds of sensitive control instruments and wiring. (Photograph from National Board of Fire Underwriters.)



This aerial view shows the crane as it appeared before the explosion that put it out of operation on April 16, 1947.

GENERAL ELECTRIC

200-64

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IN SIX MONTHS"

DOCKED IN 90 DAYS

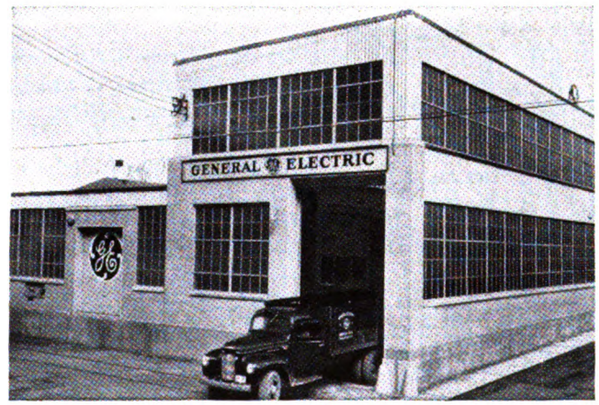
"On the spot" engineering aid plus fast delivery of replacements from G-E warehouses enables operator to get vital unloading crane back in service months ahead of schedule.

"Due to splendid co-operation . . . we were able to meet our schedule and stop losses that were running to the extent of several thousand dollars per day." This statement was recently made by Donald W. Smith, Vice President of the Seatrain Lines system, and is another proof of how G-E Keep 'em Sailing Service helps operators increase ship turn-arounds.

It all started when the Texas City, Tex. explosion destroyed a huge railroad car unloading crane operated by Seatrains. The most optimistic observers declared it would be six months before it would be put back in service. But the stricken port was badly in need of the supplies which could be handled by Seatrains. At that very moment, a freighter lay in the harbor, unable to discharge her cargo.

It is a matter of record that only 90 days later, the 125-ton crane was busy lifting loaded freight cars off a Seatrain ship. The explosion was only a few days old when General Electric engineers from Houston came on the scene to survey the damage. A list of essential equipment was prepared. Then, working together as a smoothly functioning team, personnel at G-E's Houston office, New York district office, and the Schenectady manufacturing plant expedited production and delivery of the essential electric control equipment. On the very day promised, the last bit of cable, the last instrument was received in Texas City—three months from the starting date.

Of course, the nature of the Texas City emergency demanded delivery speed which would not be possible in the average situation. Nevertheless, when it can be done at all, G-E Keep 'em Sailing Service will deliver a part or a complete job with a speed that cuts your port time and protects your profits. We've prepared a new marine service bulletin called "When Your Ship Comes In . . ." Write for your copy now. ***Apparatus Dept., Section AF-4693, General Electric Company, Schenectady 5, N. Y.***



G-E Keep 'em Sailing Service is nationwide. It is available in 26 cities on all three coasts and consists of skilled service engineering, $1,000,000 warehouse stocks of renewal parts, complete service shop repair facilities, and a time-saving unit exchange plan.

KEEP 'EM SAILING SERVICE

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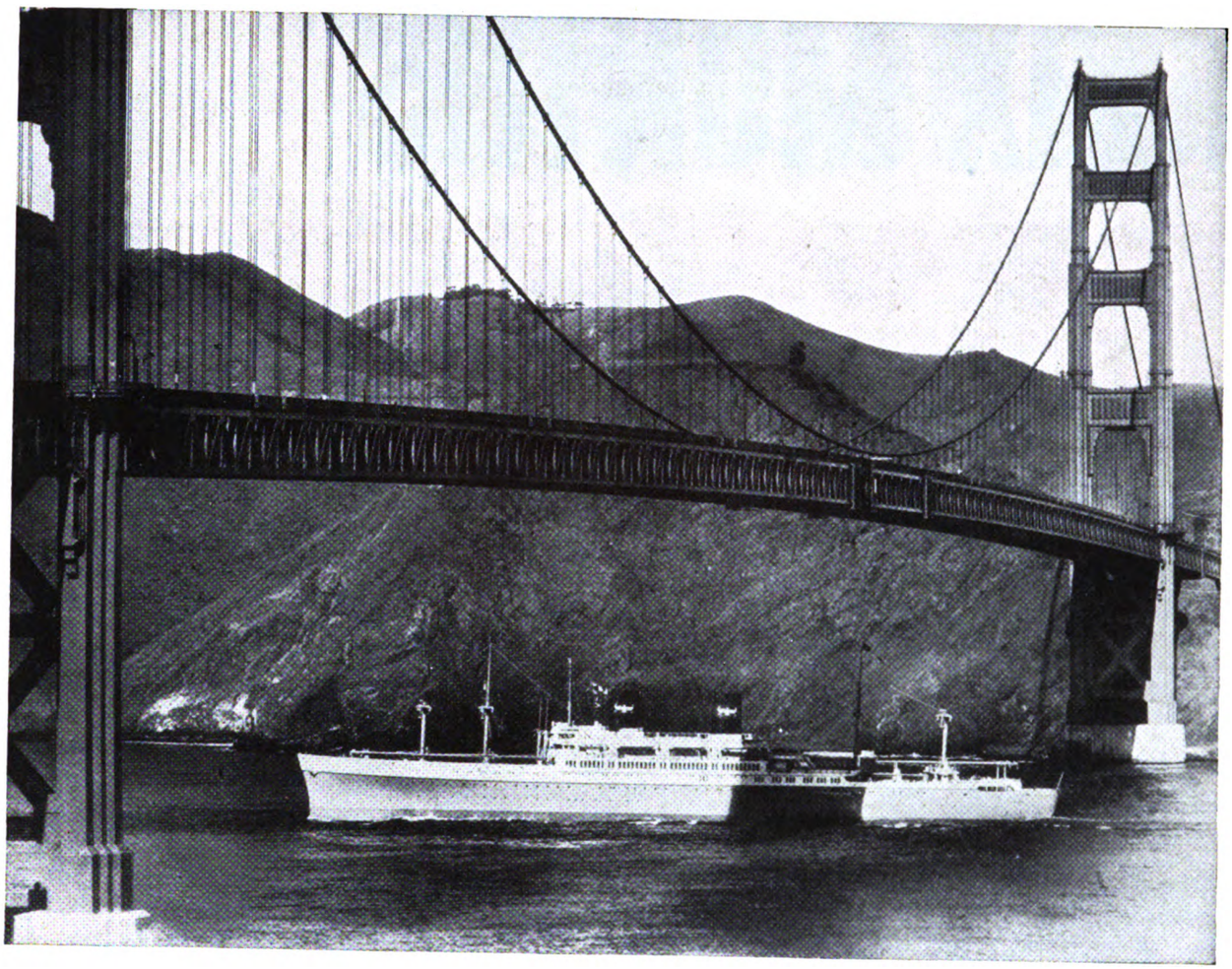
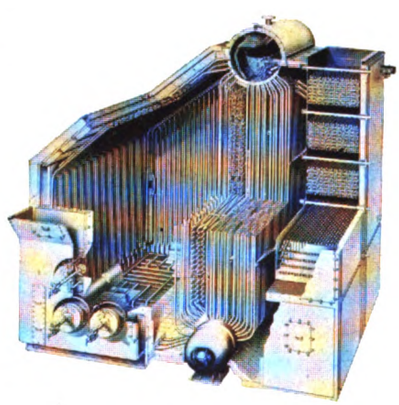


C-E BOILERS EXCEED EFFICIENCY RATING ON TRIALS

On the trial runs of the new PRESIDENT CLEVELAND the four C-E Marine Boilers met all specified ratings with a good margin to spare.

Specifications called for a maximum consumption in each boiler of 3007 lbs per hr of 18,500 BTU oil. For all four boilers this would result in about .670 lbs per shp hr for all purposes. On the maximum power run, with auxiliary steam consumption cut to a minimum, the consumption per shp hr was .609 lbs. On the normal power economy run, with all auxiliaries in use, the fuel per shp hr for all purposes averaged .623 lbs.

This high boiler efficiency reflects the results of high pressure, high temperature design as developed by C-E in the Marine field — one of the many reasons for the choice of C-E in so large a proportion of present shipping.



Cut-away view of C-E Boiler, Type V2M. There are four of these boilers on the PRESIDENT CLEVELAND and four on the PRESIDENT WILSON, now building. Each boiler is designed to supply 40,000 lbs of steam per hr under normal operation at 600 psi and 840 F, with an overload capacity of 44,000 lbs of steam per hr.

B-208

COMBUSTION ENGINEERING

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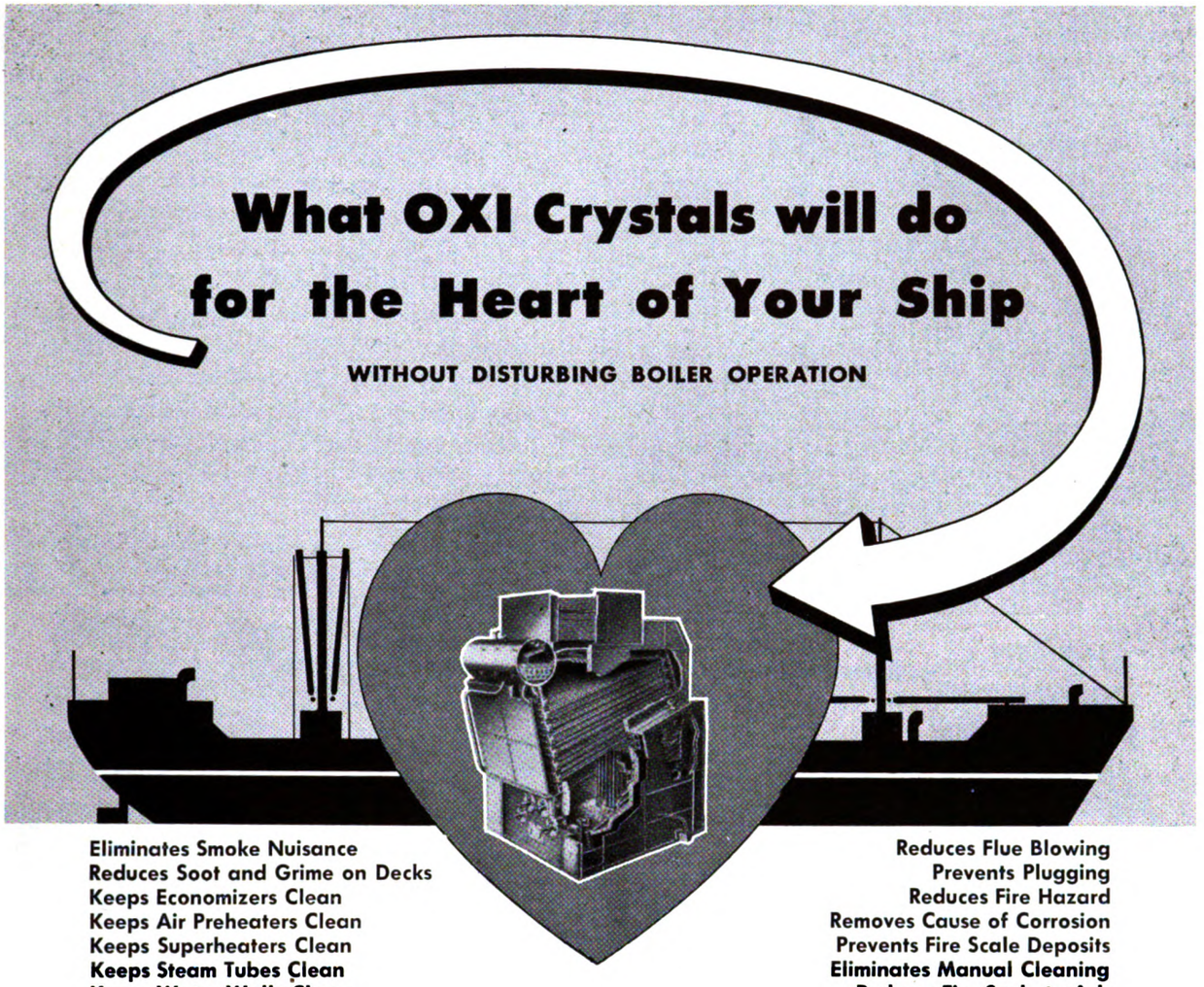
What OXI Crystals will do for the Heart of Your Ship

WITHOUT DISTURBING BOILER OPERATION



Eliminates Smoke Nuisance
Reduces Soot and Grime on Decks
Keeps Economizers Clean
Keeps Air Preheaters Clean
Keeps Superheaters Clean
Keeps Steam Tubes Clean
Keeps Water Walls Clean

Reduces Flue Blowing
Prevents Plugging
Reduces Fire Hazard
Removes Cause of Corrosion
Prevents Fire Scale Deposits
Eliminates Manual Cleaning
Reduces Fire Scale to Ash

CHEMICALLY CLEANS THE ENTIRE FIRESIDE OF BOILERS

FREE OXI SERVICE

At your request and without cost or obligation, one of our qualified trained engineers will inspect your boilers when in port, and submit to you a written report regarding the results that can be obtained with the Oxi Chemical Process. He will make the initial application and instruct your operating engineers in the most effective method to get maximum results in your boiler. He will then inspect your boilers periodically and submit reports of progress.

Consult an Oxi Field Engineer—now available at major ports—or write our General Office for further information.

FREE OXI MARINE SERVICE IS AS NEAR AS YOUR TELEPHONE

NEW YORK CITY, Watkins 9-7219
BAYONNE, N. J., 3-1432
PHILADELPHIA, PA., Howard 8-5700
Newton Square 0640
BALTIMORE, MD., Wolfe 9655
NEWPORT NEWS, VA., 4-1784
NORFOLK, VA., 2-5966
MOBILE, ALA., 3-2127

OXI CRYSTALS

NEW ORLEANS, LA., Canal 6151
HOUSTON, TEX., Woodcrest 6-8351
Wentworth 3-6387
GALVESTON, TEX., 2-3039
WILMINGTON, CALIF., Terminal 4-7291
LONG BEACH, CALIF., LB 683-553
SAN FRANCISCO, CALIF., Sutter 1-5890
PORTLAND, OREGON, Broadway 2561
SEATTLE, WASH., ELiot 4262

OXI CORPORATION, GARY, INDIANA

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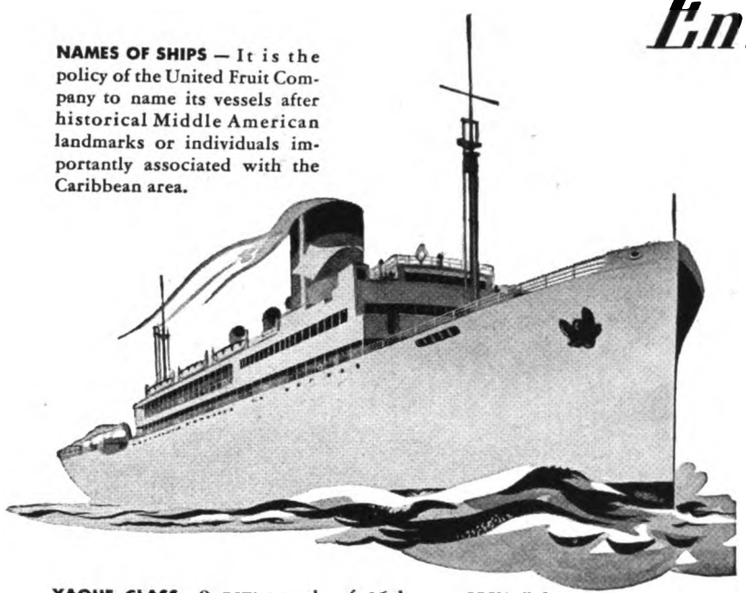
Envoys of Mutual Enterprise

NAMES OF SHIPS — It is the policy of the United Fruit Company to name its vessels after historical Middle American landmarks or individuals importantly associated with the Caribbean area.



These are the American Flag vessels which will spearhead the United Fruit Company's Great White Fleet in the Middle American Trade. Eighteen are fast, fully refrigerated cargo vessels, new as tomorrow's mail. Six are handsomely reconditioned cargo-passenger liners of established Caribbean cruise distinction. These twenty-four vessels become envoys of mutual enterprise between the Americas—tangible expression of one Company's interpretation of the Good Neighbor Policy.

YAQUE CLASS—9 new vessels of 16 knots; 385'11" long; 9,338 tons displacement; and refrigerated cargo space of approx. 197,000 cubic feet. Accommodations for 12 passengers.

FRA BERLANGA CLASS—9 new 18.5 knot twin screw ships... 455'5" long, with 12,890 tons displacement, and refrigerated cargo capacity of approx. 318,000 cubic feet. Accommodations for 12 passengers.

TALAMANCA CLASS — 6 completely reconditioned passenger-cargo luxury liners, offering first class accommodations for 95 passengers. All rooms face the sea. Permanent outdoor pools, spacious promenades and public rooms, sound movies.

GREAT WHITE FLEET

UNITED FRUIT COMPANY

General Offices: 1 Federal Street, Boston 10

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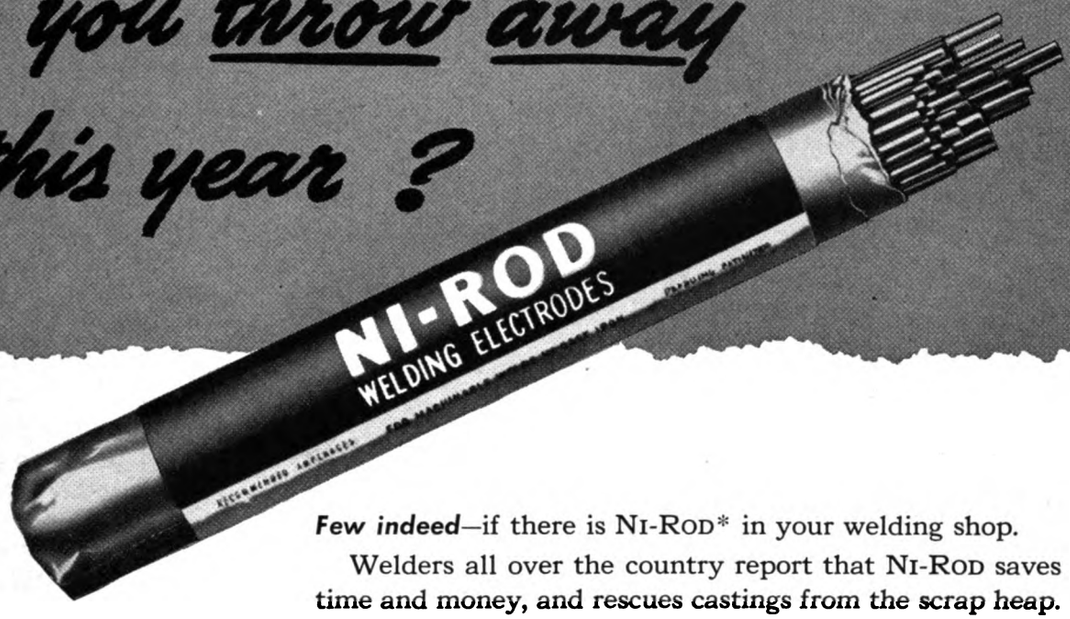
How many castings will you throw away this year ?



Few indeed—if there is NI-ROD* in your welding shop.

Welders all over the country report that NI-ROD saves time and money, and rescues castings from the scrap heap.

NI-ROD makes machinable welds in cast iron . . . joins cast iron to steel . . . makes it easy to repair cracked, porous, and imperfect castings.

Here is what welding men are saying about NI-ROD:

- "NI-ROD'S *ease of handling shortcuts special steps like preheating, and reduces labor time.*"
- "NI-ROD'S *crack-free, non-porous nickel deposit fuses completely with cast iron under the toughest welding conditions.*"
- "NI-ROD'S *smooth flow keeps down hardness.* NI-ROD *welded castings are easy to machine.*"

Try NI-ROD in your own welding shop. Order a five pound package today. Your distributor stocks it in 3/32″, 1/8″, 5/32″ and 3/16″ diameters.

*Reg. U. S. Pat. Off.

GET NI-ROD FROM

Whitehead Metal Products Company, Inc.
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Pacific Metals Company, Ltd.
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THE INTERNATIONAL NICKEL COMPANY, INC.
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EMBLEM OF SERVICE
INCO NI-ROD
TRADE MARK

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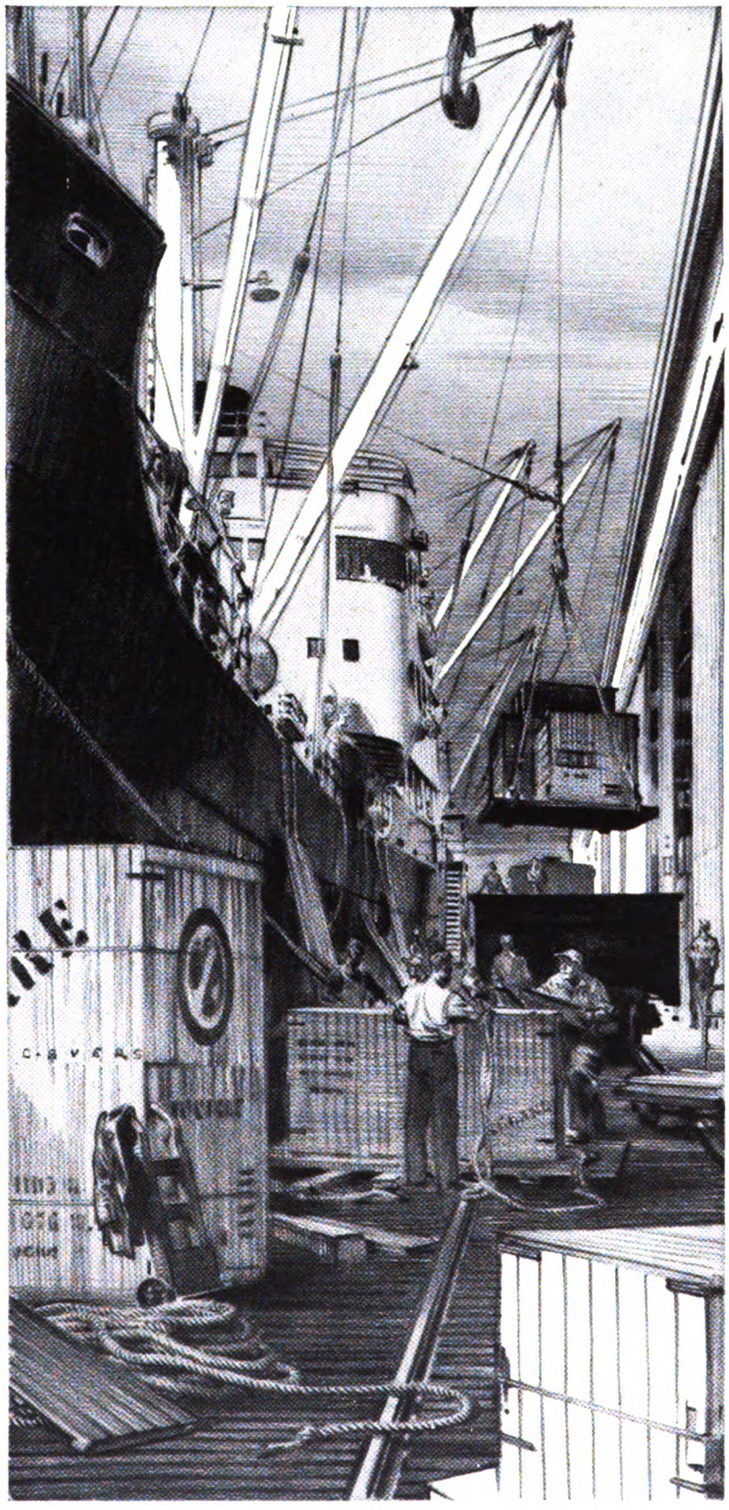
NEWPORT NEWS HAS WHAT SHIPS NEED

8 *You sail full and down*



THERE are many good things about Newport News that are to the advantage of shrewd ship management. One of these is the wide variety of tonnage that comes to tidewater at that port.

As you well realize, extensive variety of potential cargo requiring ship space makes it easier for you to pick up at Newport News the kind of cargo that would naturally go to the foreign ports you plan to touch.

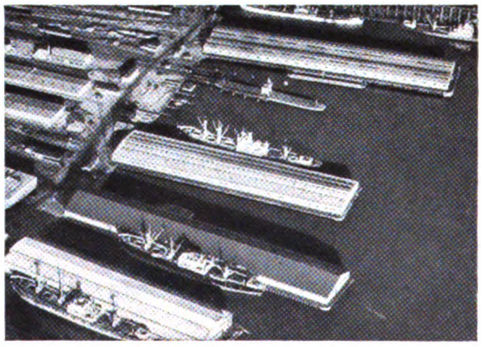
Moreover, this great diversity of materials, goods and commodities waiting at Newport News for you to pick up, helps you to work things so that you can sail full and down—which of course is very profitable for you. You get cargo for weight, and cargo for measurement. A nice combination.

And this is only one of many reasons why Newport News is a port that really does help ships make money.

The World Commerce Department of the Chesapeake & Ohio is a service organization fully equipped to help exporters, importers, forwarders and ship operators on all problems related to rail and ocean shipping of foreign and intercoastal freight.

If you have a problem, contact G. C. Marquardt, General Manager, World Commerce Department, Chesapeake & Ohio Railway, 233 Broadway, New York 7, N. Y., or any C&O representative.

Newport News is famous for quick ship turn-around



THE CHESAPEAKE & OHIO RAILWAY

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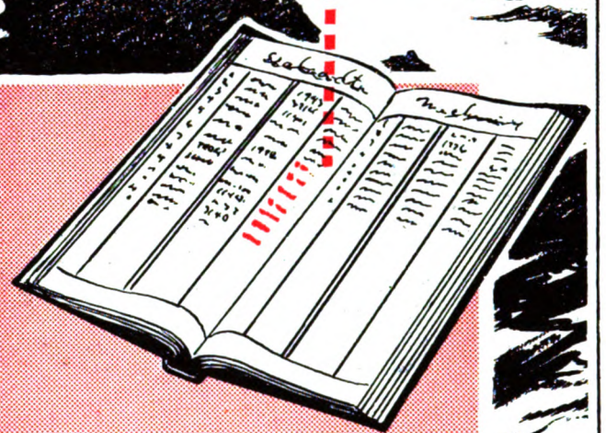
VIBRATION

IS RED INK IN THE LEDGER



The SEABOARD ANTICIPATING GOVERNOR CONTROL, for reciprocating engines, minimizes vibration and avoids costly damage when a propeller is suddenly out of water due to heavy seas. It provides instantaneous and automatic control of engine speeds regardless of ship's draft.

Seaboard Anticipating Governor Control cuts off the amount of steam to the main engine before excessive speed is developed.

SEE SEABOARD FOR

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PISTON & VALVE RINGS FOR
RECIPROCATING ENGINES

SEABOARD MACHINERY CORP.

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Pacific Coast Representative: CONSOLIDATED SERVICES, INC.
71 COLUMBIA ST., SEATTLE, WASH.

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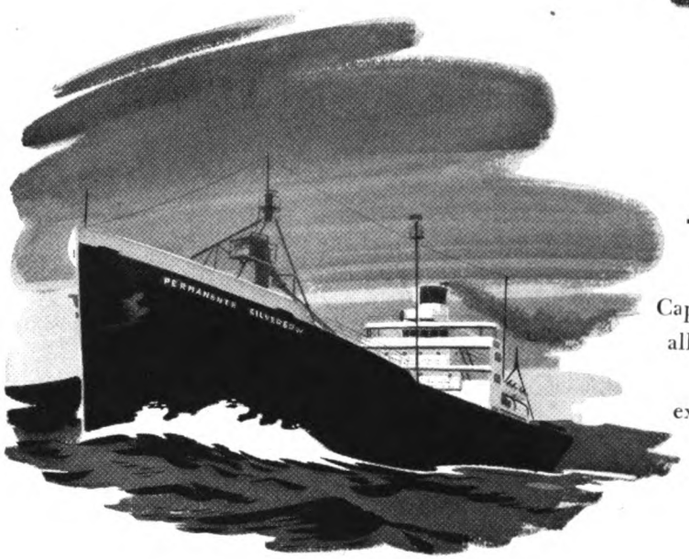
Sperry RADAR saves miles says veteran steamship captain

Sperry RADAR enabled Captain Frank R. Gillard of the S. S. *Permanente Silverbow* to maintain course and speed while steaming off Lower California en route to Long Beach, over routes where navigational shorelights are not provided. "I was able to cut corners in keeping 5 miles off shore, thereby saving several extra steaming miles," says Captain Gillard.



. . . shows all shoreline detail on its large scope

Capes, bays, islands, outlying rocks — all coastline details, all above-water objects and hazards — were readily seen in Sperry Radar's clear and large scope. Even in extreme darkness, Captain Gillard found that he could "steer the usual courses as in daylight" by means of Sperry Radar's clear scope images.

. . . keeps ships on schedule in all waters and weathers

The *Permanente Silverbow* completed its passage over the unmarked Lower California route *safely* and *on time* . . . proving again that Sperry RADAR can keep any type of craft on schedule over ocean, river or lake . . . in darkness, fog, rain or snow.

• • • •

SOME REASONS WHY: Sperry's one-mile range scale · Clear images on a 12-inch scope · Variable Range Marker · Operating range 80 yards to 40 miles · True or relative image · Backed by world-wide Sperry service.

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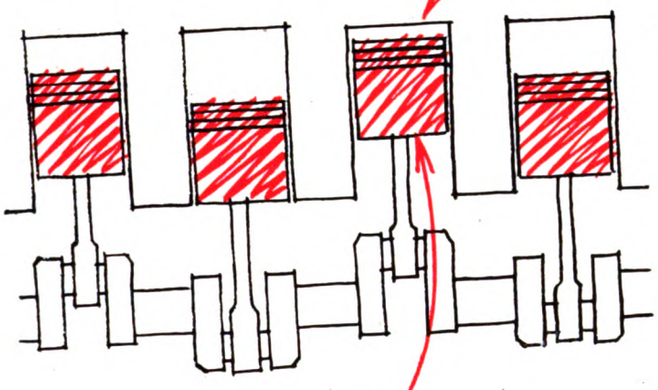
LUBE MEMO

Engine overheating caused by stuck rings

Compression loss 30%

400 400 280 400



Hot blowby gases burned piston.

Shop found rings in #2 badly stuck by ordinary oil (blowby has been wasting power).

Foreman claims RPM DELO Diesel Engine Lubricating Oil's compounds will prevent stuck rings 3 ways:

1. Decrease carbon
2. Stop formation of gum.
3. Hold contaminants in suspension (they're flushed out on oil change).

Give shop go ahead on RPM DELO Oil

DIESEL ENGINE RPM DELO LUBRICATING OIL

STANDARD OF CALIFORNIA

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Here's How To

SAVE That OIL
AND GET MORE B. T. U.'S.

Today the newspapers and radio are reporting delays on ship departures due to oil shortages and oil transportation difficulties. It is beyond the power of vessel operators to correct such obstacles, but with Fuelkleen it is easy and inexpensive to save oil and at the same time secure greater power plant efficiency once the oil is pumped aboard the vessel!

The efficiency and use of oil-saving Fuelkleen has long been appreciated by operators and engineers. Here is one of many examples of what Fuelkleen is doing:

A TYPICAL TEST

Aboard one vessel before using Fuelkleen the super-heat temperature was 700° F, due to carbon deposits within flue gas passes. After the oil-containing Fuelkleen was used, the temperature increased to 735° F. Shell steam pressure on the fuel oil heaters ran 50 lbs. before the use of Fuelkleen; 30 lbs. after the Fuelkleen application. A three months' Fuelkleen trial period showed a saving of $900 in fuel. The vessel showed a saving of 7 barrels of fuel per day, and in 240 steaming days per year the saving was 1680 barrels of fuel oil.

Consult the Sumco Service Engineer listed below, who is nearest you, or write Sumco Products, Inc., on specific cases involving sludge prevention and removal. Ask for a copy of the Sumco Handbook.

Depend On FUELKLEEN For

- Removing sludge from bunkers at a cost of less than 5% of manual cleaning methods.
- Improving atomization of fuel oil, preventing the formation of oil-consuming sludge.
- Eliminating gummy deposits from the interiors of preheaters.
- Reducing time and expense in maintaining burner tips and registers.
- INCREASING THE HEAT YIELD OF EVERY GALLON OF FUEL by Better Atomization AND Eliminating Contamination of Tank and Equipment from Fuel Oil System to Boilers.

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BROOKLYN 31, N. Y.

Sumco PRODUCTS INC.

821 FOLSOM STREET
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Manufacturers of FUELKLEEN • TUBEKLEEN • HEATERKLEEN • AQUAKLEEN • OILKLEEN • SUMCO SUDS

FUELKLEEN

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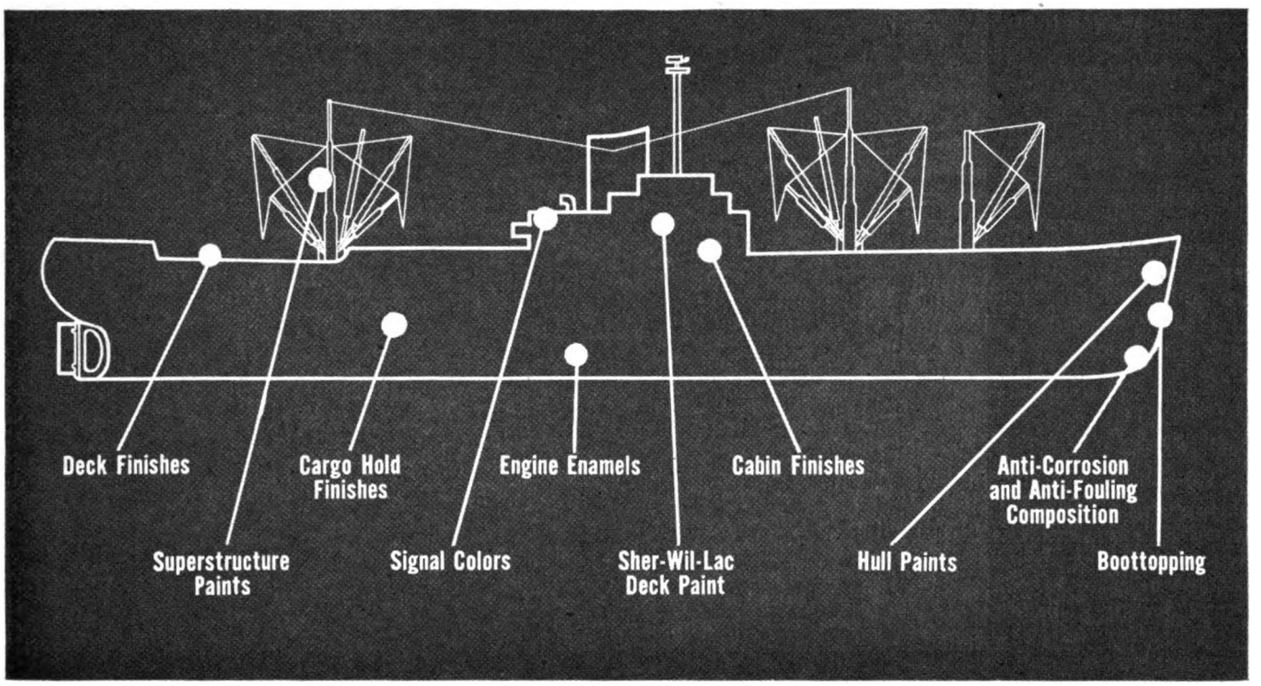

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Whatever your finishing needs, there's a complete stock of Sherwin-Williams Marine Finishes for immediate delivery at 14 important ports on the Atlantic and Pacific coasts and the Gulf of Mexico!

Take advantage of this extensive Sherwin-Williams network . . . and use the highest quality marine finishes made by the world's largest paint manufacturer. Remember, when you specify Sherwin-Williams Marine Finishes, you're specifying the *best paint money can buy*—made under exacting standards to meet exacting conditions on the high seas! The Sherwin-Williams Co., Marine Division, Cleveland 1, Ohio. (Export Division, Newark, N. J.)

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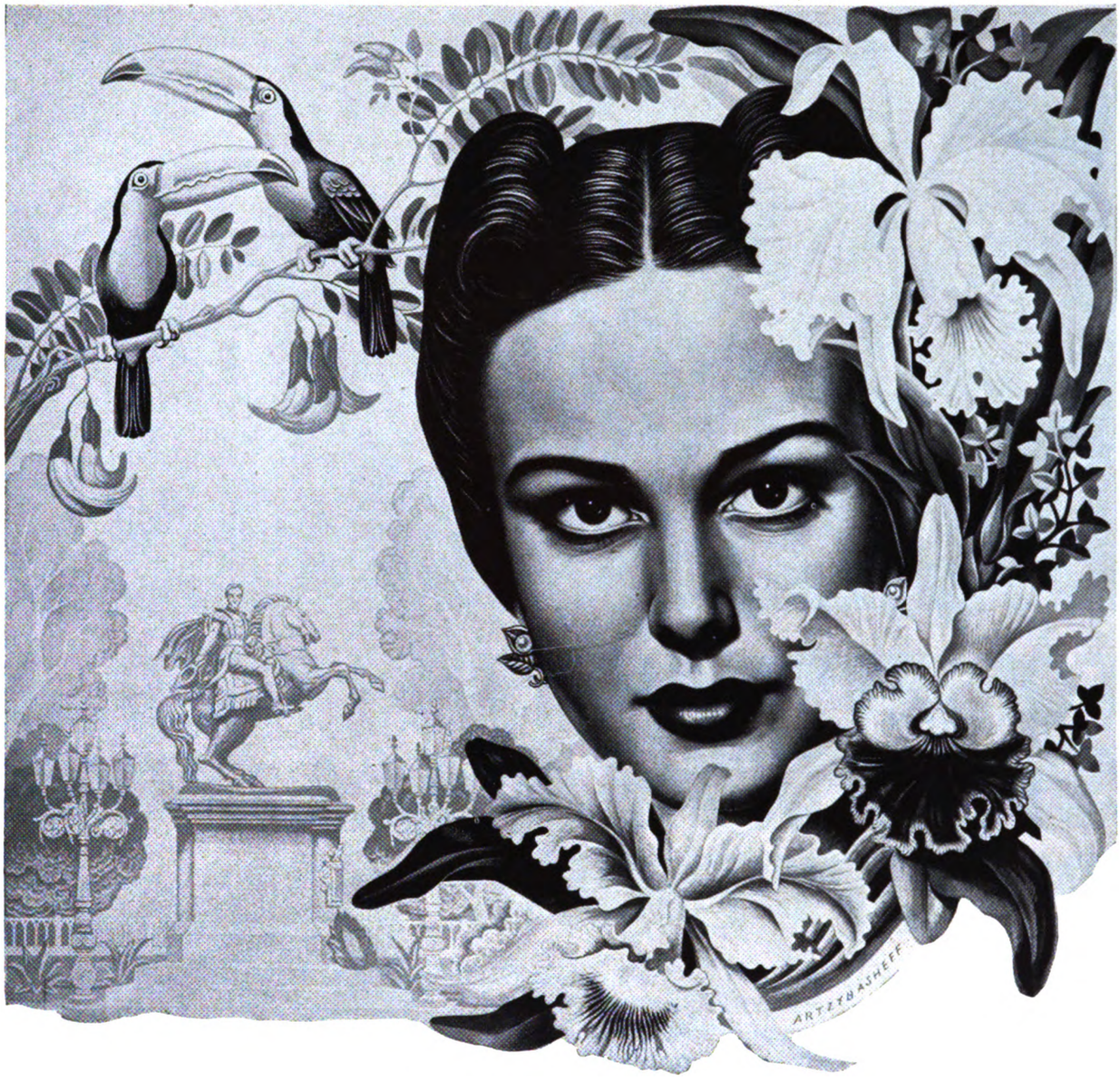

ALCOA *sails the* CARIBBEAN

The homes of the Caribbean area boast many products such as automobiles, drugs, clothes, shoes and packaged foods, labeled "Made in USA." They've been paid for with petroleum, bauxite, sugar and other raw materials that we in turn need. Set against the Caribbean's background of bright tropical scenery, picturesque places, and sun-drenched beaches are thriving markets, served by passenger and cargo ships of the Alcoa fleet. Alcoa Steamship Company, Inc., 17 Battery Place, New York 4, N. Y., or One Canal Street, New Orleans 16, La.

ALCOA STEAMSHIP COMPANY, INC.

OFFICES IN: BALTIMORE, CHICAGO, MOBILE, MONTREAL, NEW ORLEANS, NEW YORK, ST. LOUIS, TORONTO

This advertisement in leading magazines is helping to acquaint the public with the excellent freight and travel facilities now offered by ships of the American Merchant Marine.

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Good Company...

MORAN

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NEW YORK ★ NEW ORLEANS ★ SAN FRANCISCO

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Channel juncture in St. Mary's River below Sault Ste. Marie. Vessel downbound, range scale 4 miles, relative bearing.

"MARINERS PATHFINDER" sees through rain, fog and darkness.

Submarine Signal Manufactures Both

...Gives You Unbiased Advice on the Type Best Suited for Your Vessels

Regardless of where your vessels sail — ocean, lake or inland waterways, you can now obtain *sincere unbiased advice* on the radar frequency best adapted to your navigational problems from Submarine Signal Company . . . the only manufacturer of both 3 cm and 10 cm radar equipments.

This impartial, unbiased application assistance is based on the years of experience of the Submarine Signal Company and the Raytheon Manufacturing Company in producing nearly *three-quarters of all the marine surface search radar units ever built in the United States.* It mirrors the accumulated "know-how" of the engineers who first disclosed a complete radar system and have already designed, built and installed *thousands of both 3 cm and 10 cm radar units.*

So before you buy any radar equipment, consult with Submarine Signal Company on the type you should use (3 cm or 10 cm) on your vessels.

Remember, too, "MARINERS PATHFINDER"* Radar has the world's greatest acceptance among ship owners. Write, wire or phone for information.

*Trade Mark

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160 WASHINGTON ST., NORTH, DEPT. 2812, BOSTON 14, MASS.
and
MACKAY RADIO & TELEGRAPH COMPANY
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World Wide Sales and Service by
SUBMARINE SIGNAL COMPANY, AUTHORIZED DISTRIBUTORS

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ANNOUNCES THE APPOINTMENT OF THE TWO NEW DISTRIBUTORS

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Mobile, Alabama
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REFRACTOKOTE increases life of refractories . . . Minimizes slag and soot adhesion . . . Prevents flame and gas impingement . . . Hard glazed surface reflects heat and saves fuel.
REFRACTOKOTE stops cracking and spalling . . . Saves shutdown time and expense . . . Simply and economically applied by unskilled labor with either brush or spray gun.

REFRACTOKOTE L.T.—A very efficient coating where temperatures range from 1400° to 2200° Fahrenheit.
REFRACTOKOTE M.T.—A sturdy coating producing excellent results where temperatures range from 2000° to 2900° Fahrenheit.
REFRACTOKOTE H.T.—The most durable coating produced. Applicable where temperatures range from 2500° to 3950° Fahrenheit.

REFRACTORY COATINGS CO.

129 OLIVER ST. NEWARK 5, N. J.
PHONE MArket 2-2532

Other Representatives: NATIONAL ENGINEERING COMPANY, 1828 Greenmount Ave., Baltimore 3, Md.; C. E.. THURSTON & SONS, 30-32 Commercial Place, Norfolk 10, Va.; T. RODDY LANIGAN COMPANY, 343 Southwest North River Drive, Miami, Florida. MARINE SOLVENTS SERVICE CORP., 214 No. Marine Ave., Wilmington, Calif. Phone: TErminal 4-3438—1440 Sixth St., San Francisco, Calif. Phone: HEmlock 1-5343.

A REAL BARGAIN!
AT A FRACTION OF ITS COST

COMPLETE SHIP OR EQUIPMENT

Built in 1945—Almost Fully Equipped—including

2-900 hp General Motors Diesel Engines
2-60 kw Cummins Diesel Generators

Engines have been tested and serviced by Diesel experts within last 30 days. Demonstration on request.

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Twin Screw
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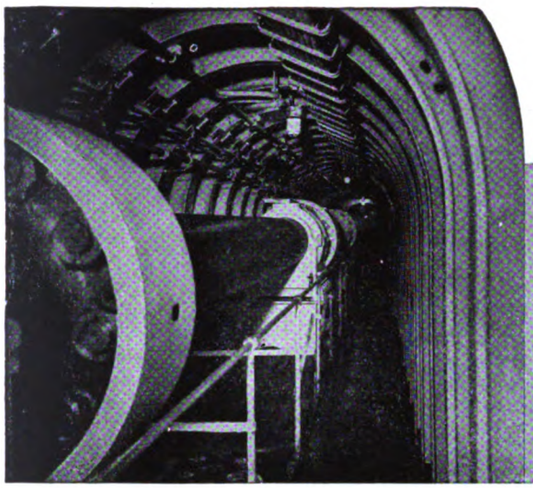

SHAFT ALLEY Chatter

Strohmeier Heads Bethlehem Shipbuilding

Daniel D. Strohmeier has been named to succeed the late W. H. Collins as vice president in charge of the Bethlehem Steel Company's Shipbuilding Division.

Mr. Strohmeier has been assistant to vice president since 1942, with offices at 25 Broadway, New York. His entire business career has been with the shipbuilding division of Bethlehem.

He was on the executive staff of the shipbuilding division during Bethlehem's wartime building program when 1127 naval and cargo vessels were constructed, a world's record in private building. He was a representative of the shipbuilding industry on the Government's wartime Shipbuilding Labor Stabilization Committee. He also served as a representative of the industry on the Shipbuilding Commission of the War Labor Board.

He started in the hull departments at the Quincy, Massachusetts, Yard in July, 1934. He became deck leader and was then transferred to the estimating department in 1935. In 1936 he was named as technical assistant and was transferred to the New York office in that capacity in 1939.

Mr. Collins, who died of a heart attack January 16, was a director of Bethlehem Steel Corporation. He had started with Bethlehem in 1917 as an assistant hull superintendent, and after holding various production posts became general manager of the company's Quincy, Mass., Yard in 1937. During World War Two he was made vice president and general manager of Bethlehem-Hingham Shipyard, Inc., and in 1945 became general manager of the Boston District, including all of Bethlehem's yards in that area. He was made a vice president of the company in December, 1945.

HEADS BETHLEHEM SHIPBUILDING DIVISION . . . DANIEL D. STROHMEIER, newly-appointed Vice President in Charge of the Bethlehem Steel Company's Shipbuilding Division.

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McAuliffe Heads Board of American Eastern Corp.

John McAuliffe, formerly president of the Isthmian Steamship Company and still a director, was elected as chairman of the Board of American Eastern Corp. Mr. McAuliffe will retain his directorship in Isthmian.

American Eastern is launching into an extensive expansion of its shipping services to the Near East adding heavy-lift vessels and oil tankers to its present fleet of especially designed heavy-lift cargo ships. The company is in the process of acquiring T-2 tankers from the Maritime Commission and are planning to build several new 25,000-ton tankers of 20-knot speed in American Yards. Gibbs & Cox, New York, will design the new tankers.

In addition to Mr. McAuliffe's directorships in Isthmian and American Eastern, he is also a director of the American Merchant Marine Institute and the Maritime Association of the Port of New York; an alternate director and chairman of the Policy Committee of the National Federation of American Shipping; and member of the Board of Managers and the Standing and Finance Committee of the American Bureau of Shipping.

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Neilson Named President of Overseas Tankship Corp.

Andrew Neilson, formerly vice-president and general manager of Overseas Tankship Corp., an affiliate of Caltex, has been elected president of the company according to an announcement by W. H. Pinkard, chairman of the board of directors.

Mr. Neilson is well known on the west coast where he served for twenty-five years with affiliated companies of Standard of California. Just prior to joining Overseas in New York, he was general manager of Pacific Tankers, Inc., in San Francisco.

Overseas Tankship Corp. is now operating a fleet of approximately 50 T-2 tankers under Panamanian registery.

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U.S. Lines Appoints Kellogg for NW District

With the opening of the Seattle office of the company in the White-Henry-Stuart Building, United States Lines announces the appointment of David M. Kellogg as district passenger and freight manager of the Northwest territory.

Kellogg is well known in Seattle shipping circles having previously been associated with the Interocean Steamship Corporation, Weyerhaeuser Steamship Company and Pacific Coast Direct Line. He is a graduate of the University of Washington. During the war, he attained the rank of Commander in the United States Navy and holds many decorations among which is the Legion of Merit (Combat V).

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UNITED STATES LINES OPENS NEW OFFICE IN SEATTLE with DAVID M. KELLOGG as District Passenger and Freight Manager of the Northwest territory.

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AN OLD LADY OF THE LAKES TAKES A NEW LEASE ON LIFE

...with a new B&W boiler

For more than 50 years the tugboat Edna G. has been faithfully performing her tasks in the Great Lakes District. *And during all of this time she has been supplied with steam by her original B&W boiler.*

Today, the more recently built ships and those contemplated for future service on the Great Lakes are far heavier than those built a half century ago, and much more power is required to handle them.

This requirement is being met by giving the "Old Lady" a new lease on life—with a new B&W boiler— a modern unit with the same ruggedness and meeting the same space conditions as the old, but incorporating advanced features that will furnish greater steaming capacity at lower cost.

Such B&W boilers are paying big dividends in tugs and luxury liners alike — adding years of useful life to old vessels and contributing to the profitable operation of new ones. Make sure that you are getting *your* share of these benefits by calling in a B&W Engineer. His recommendations will be backed by unequalled Marine experience.

BOILER MODERNIZATION PAYS IN MANY WAYS

Reduces Maintenance Expense
Saves Fuel
Conserves Space
Decreases Weight
Increases Speed and Power
Extends Operating Range
Prolongs Ship's Service Life
Increases Dependability and Availability.

M-208

BOILERS FOR ALL TYPES OF SHIPS

★ ★ ★

OTHER B&W PRODUCTS — Seamless & Welded Tubes for All Pressure and Mechanical Applications . . . Refractories . . . Alloy Castings . . . Oil Burners . . . Chain-Grate Stokers . . . Stationary Boilers and Component Equipment . . . Chemical Recovery Units . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
GENERAL OFFICES: 85 LIBERTY ST., NEW YORK 6, N.Y.
WORKS: ALLIANCE AND BARBERTON, O.; AUGUSTA, GA.

ON THE PACIFIC COAST: C. C. MOORE & CO., 450 MISSION STREET, SAN FRANCISCO

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SHAFT ALLEY (continued) Chatter

A. D. ELLS, left, District Manager, Maintenance & Repair Div., Pacific, U. S. Maritime Commission; and R. RISHER, Assistant Manager of Construction and Repair, Standard Oil Co., New Jersey, Marine Dept., were West Coast travelers in January in connection with the T-2 tanker reconversion program. They are pictured at Long Beach, where they greeted the local Port Engineers prior to the January meeting.

Captain Spaulding Skippers SS URUGUAY

Captain Albert P. Spaulding has been reappointed as master of the URUGUAY, second of Moore-McCormack's liners to return to service. Captain Spaulding, a veteran master who has commanded Moore-McCormack ships in both the Scandinavian and South American runs, commanded the URUGUAY throughout her wartime career. A native of Seattle, Washington, and now a resident of Phoenixville, Pennsylvania, he went to sea in 1911 and became a master in 1917. He commanded several ships in the army transport service during the first World War. After the war he commanded additional ships for the United States Shipping Board. His first command with Moore-McCormack Lines was the COMMERCIAL PILOT, in October, 1927. Until the outbreak of the war he commanded many ships of the Moore-McCormack fleet, including all three of the Good Neighbor Fleet—the BRAZIL, the ARGENTINA and the URUGUAY. While serving as master of the URUGUAY during the war he was awarded the Distinguished Service Medal for heroism, through his efforts in saving the URUGUAY after she had been rammed by another vessel when she was serving as a troop transport.

SKIPPER OF THE URUGUAY . . . CAPTAIN ALBERT P. SPAULDING.

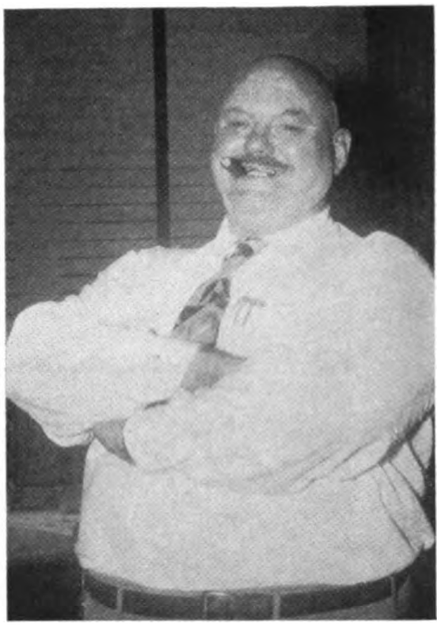
Other members of the URUGUAY's staff will include Captain Edward H. Gluck, staff captain; William N. Matches, chief engineer; Joseph C. Nunn, chief steward; and Nicholas R. Sena, chief purser. Captain Gluck came to Moore-McCormack Lines in May of 1940 and has commanded several of the company's ships, most recently the MORMACSEA. Mr. Matches served aboard the liner BRAZIL from February 1939 until his appointment to the URUGUAY, rising to the post of senior first engineer. Mr. Nunn's career at sea goes back twenty-one years. He sailed with the URUGUAY when she entered the South American service in the Fall of 1938, served also on the BRAZIL, and was aboard the URUGUAY during the war. Mr. Sena served aboard the URUGUAY when she operated in the intercoastal service and during the war rose from the post of baggage master to that of chief purser. During the reconversion of the URUGUAY he has served as paymaster for Moore-McCormack Lines at Pier 32, North River.

The URUGUAY has been thoroughly rebuilt and redecorated under the supervision of William F. Schorn, marine architect.

"Big Mike" Completes 25 Years With Erie & St. Lawrence Corp.

Although it's harder to get a story out of "Big Mike" than it is to build a ship, he inadvertently let slip the fact at a recent meeting of the New York Society of Marine Port Engineers that he had just finished his twenty-fifth year with the Erie & St. Lawrence Corp. Filling in the gaps with information supplied by his brother, Henry Mikkelsen, Marine Supt. of Erie & St. Lawrence, the following story was pieced together.

"Big Mike," officially on the rolls as G. W. E. Mikkelsen, general manager of the Erie & St. Lawrence Corp., caught his first ship in 1905 as a bellboy on the ss ESPERANCE. From then until 1917 he sailed in every unlicensed capacity on U.S. and foreign merchantmen, and still managed to get enough time to build up to Chief of Steam or Diesel, any tonnage any ocean before the First World War and the Navy caught up with him.



CELEBRATING TWENTY-FIVE YEARS WITH ERIE & ST. LAWRENCE CORP. . . . "Big Mike" G. W. E. MIKKELSEN, General Manager, who joined the firm in 1923.

During the war he was commissioned in the Navy and sailed aboard the USS FINLAND a transport which was torpedoed, and later the USS ZEELANDIA. When this ship was returned to the Dutch, "Big Mike" returned to merchant ships with the Barber Line as First Assistant. In August of 1920 he took a berth as Chief on the ss BIRD CITY and from there went Chief on the ss RADNOR.

The big strike in 1921 brought Mike ashore as a helper in a construction gang and before 1923 he had worked up to master millwright for the State of New York. In 1923 he joined Interwaterways, Inc., which later became Erie & St. Lawrence Corp., as marine superintendent, and in 1946 was made general manager.

Lykes Purchases New Orleans Warehouses

Lykes Bros. Steamship Co., Inc., started the New Orleans real estate market off with a bang in 1948 with the purchase of a group of warehouses at 1746-70 Tchoupitoulas Street at a reported price of $104,500. Company officials announced that the new warehouse facilities will make possible consolidation of Lykes warehouse facilities which are presently scattered.

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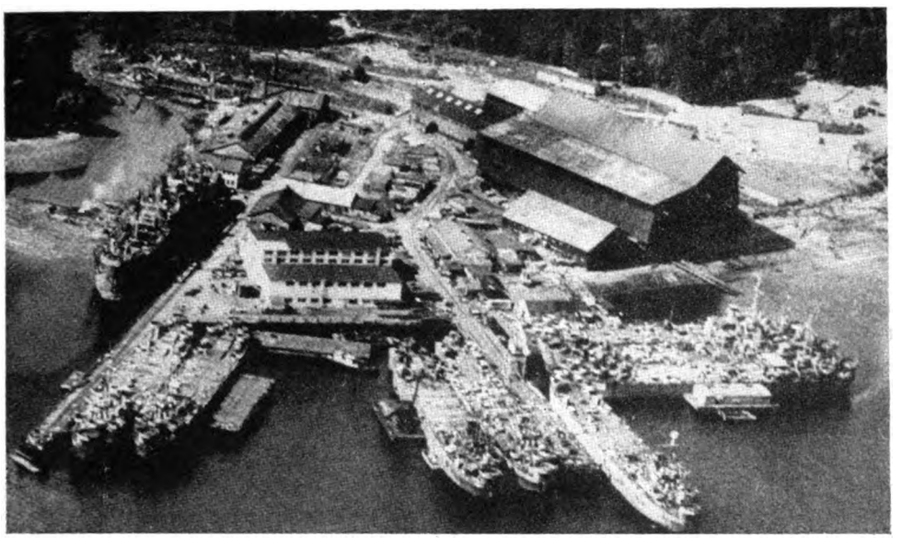
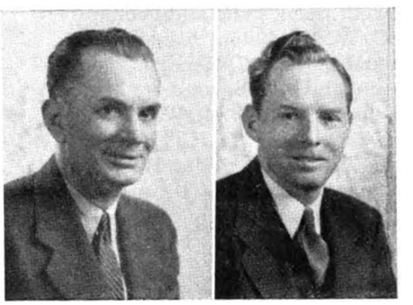


Commercial Ship Repair-Winslow Division

J. J. FEATHERSTONE
and
E. A. BLACK
co-owners
COMMERCIAL SHIP REPAIR
Announce
purchase of
Winslow Marine Railway & Shipbuilding Co.

Now . . . . . .
Two Plants At Which To Serve You
(1) Pier 66-Seattle
(2) Winslow Division-Winslow, Washington



J. J. FEATHERSTONE
Dean of ship repair. In business in Seattle since 1912. Fifteen years with Todd Shipyard in charge of drydock. General Superintendent Winslow Marine Railway and Shipbuilding Company in charge of all repair work during World War II.

E. A. BLACK
Graduate University of Washington, 1937. Five years assistant General Superintendent Winslow Marine Railway and Shipbuilding Company. In charge of all outside new construction and repair work.

Complete Facilities
for all types of
Repair, Conversion
and
New Construction
on all
Classes of Vessels

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4,000 TON DRYDOCK
at
WINSLOW DIVISION

Bidding
on
Ship Work
from
Coast to Coast

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259 ships overhauled, repaired, converted during past 12 months

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24 Hour Service

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COMMERCIAL SHIP REPAIR
Pier 66 - Seattle 4, MAin 3122

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SHAFT ALLEY (continued) Chatter

New Members Appointed to SNA & ME Committees

Vice Admiral E. L. Cochrane, U.S.N. (ret.), president of The Society of Naval Architects and Marine Engineers, has announced that in order to carry on the greatly expanded and continuing activities of the Society he has appointed new members to the various working committees for the year 1948.

The committees and their chairmen are as follows: applications committee under Richard H. Tingey; awards committee under J. Lewis Luckenbach; employment service committee under Roger Williams; endowment fund income committee under Wm. S. Newell; finance and audit committee under C. W. Middleton; local sections committee under John W. Hendry; papers committee under H. L. Seward; publicity committee under Harold M. Wick; banquet committee under C. H. Lawrence; dinner dance committee under Harry M. Bardin; scholarships committee under H. L. Seward; and book on "The Shipbuilding Business in the United States of America" committee under J. W. Powell.

New members have also been appointed to the Society's important technical and research committee, which lends its support to the coordination of research in the fields of shipbuilding and shipping, and endeavors to foster research among the facilities available for such a purpose. The activities of this committee will be guided by a steering committee under the chairmanship of John E. Burkhardt, technical manager, Bethlehem Steel Company, Shipbuilding Division, Quincy Massachusetts, assisted by Admiral S. M. Robinson, U.S.N., (ret.), Administrator of Webb Institute of Naval Architecture; Thomas H. Bossert, president, New York Shipbuilding Corp.; William Francis Gibbs of Gibbs & Cox, Inc.; Rear Admiral Paul F. Lee, bureau of ships, Navy Department; Commodore Robert C. Lee, vice president, Moore-McCormack Lines; and Rear Admiral Charles D. Wheelock deputy chief, Bureau of Ships, Navy Department.

Under this steering committee will be three sub-committees. The hydromechanics sub-committee will be headed by Dr. Kenneth S. M. Davidson, director of the Experimental Towing Tank of Stevens Institute of Technology. A committee investigating ships' structures will be under J. Lyell Wilson, research director of the American Bureau of Shipping, and the subject of ships' machinery will be covered by a committee under the leadership of Charles H. Johnson, chief engineer of the Federal Shipbuilding and Dry Dock Company.

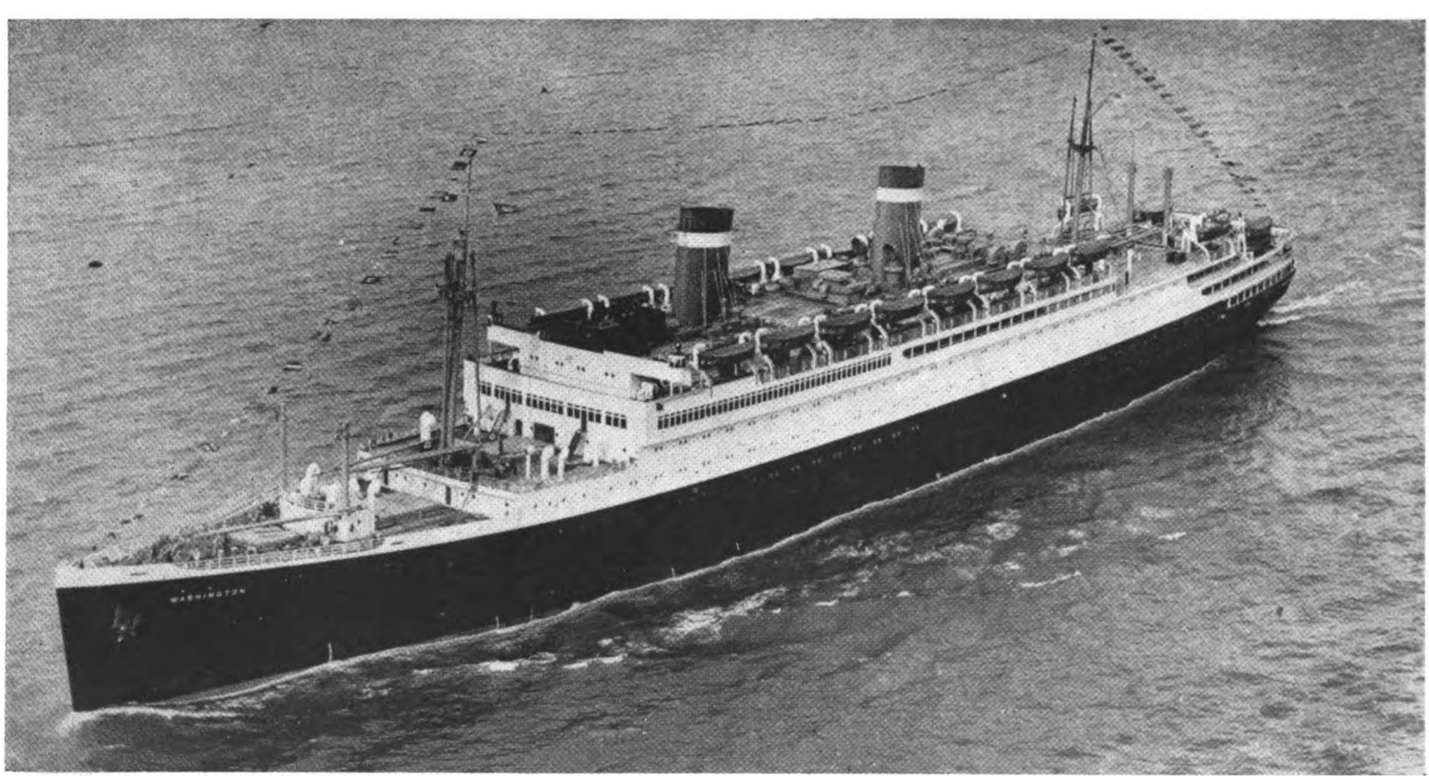
SS WASHINGTON Begins Postwar Service as One-Class Ship

United States Lines has inaugurated the first regular popular-priced service to Europe on a large, fast vessel with the sailing of the WASHINGTON. Under the command of Captain John Anderson, master, she sailed from Pier 62, N.R. February 2, 1948, for Cobh, Southampton and Havre.

The WASHINGTON, second largest liner ever built in the U. S. A. and one of the most popular luxury liners in the North Atlantic for seven years prior to World War II, was purchased by the Government in 1941, stripped of her luxurious fittings and converted into a Navy transport. She served throughout the war as the U.S.S. Mount Vernon, carrying 315,000 troops to battle areas all over the world and logged a total of 363,000 miles of steaming. Later she served as a war bride transport.

Now under Government charter to the United States Lines, the WASHINGTON recently underwent conversion at Newport News for commercial service at a cost of $3,000,000, most of which was allotted to mechanical repairs and reconditioning. She was not reconverted to her original de luxe status and she reenters transatlantic service as a one-class ship with a berth capacity for 1,108 passengers. As such she will fill a present need for comfortable, popular priced transportation on a large, fast vessel.

SS WASHINGTON enters popular-priced one-class passenger service to Europe.



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18 Booms for Faster Freight Handling

Yes, American President Lines ships are busy ships. They can swing 18 booms to load and discharge cargo at one time for speediest handling of your shipment.

This is only one of an imposing list of features in American President Lines' custom-built fleet. Others are Cargocaire, Separate Compartment Refrigeration (with stabilized temperatures from −10° to 55°), Special Cargo Lockers, Separate Controlled Temperature Cargo Oil Tanks and many more. Let us give you full particulars.

★ SPEED ★ REGULARITY
★ FREQUENCY ★ DEPENDABILITY

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Oakland • Washington, D. C.

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SHAFT ALLEY (continued) Chatter

A Marine Salon Photo

SS MORMACLAND ARRIVES IN SEATTLE . . . Inaugurating Moore-McCormack Company's Pacific Republic Line service to Puget Sound. CAPTAIN B. M. KELLY, left, Master, ss MORMACLAND; C. J. RAVESON, right, District Manager, Moore-McCormack Company, Seattle.

Captain Kelly has been going to sea since 1920, including seven years with the Munson Line. He is former master of the MORMACPORT operating in the Moore-McCormack service between New York and the East coast of South America.

Gatov Elected to Presidency of PASSA

Newly-elected president of the Pacific American Steamship Association is Albert W. Gatov, who for the past two years has been executive director of the Association. Mr. Gatov succeeds E. Russel Lutz, executive vice president of American President Lines. Starting with the Pacific Steamship Company in Los Angeles in 1927, Gatov has been in shipping ever since. He was an Army Major in World War II, serving at Fort Mason in San Francisco and overseas in the Persian Gulf Command. Before going with PASSA, he served for a time with the War Shipping Administration in San Francisco.

A. R. Lintner, president of the American Mail Line, was reelected vice president for the Seattle-Puget Sound Area. Hillman Lueddemann, Pope and Talbot vice president and Portland chamber of commerce president, was reelected as vice president of the steamship group for the Columbia River Area. Matson Navigation Company's vice president Ralph J. Chandler was elected again as vice president in the Los Angeles-Long Beach Area.

New vice presidents in San Francisco, elected at last week's meeting are D. N. Lillevand, Grace Line vice president and Maitland S. Pennington, vice president of the Pacific Transport Lines. Henrietta T. Smith, San Francisco, was reelected secretary treasurer.

John E. Cushing, S. P. Fleming, A. R. Lintner, E. Russell Lutz, T. G. Plant, George A. Pope, Jr., and W. T. Sexton were elected to the Advisory Board.

The Pacific American Steamship Association comprises the sixteen major American flag steamship companies operating on the Pacific Coast.

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World Wide Shipping Opens East Coast Offices

World Wide Shipping Company has announced the opening of its offices on January 1, 1948 and the appointment of Captain W. Wolf Bauer as vice president and general manager.

World Wide Shipping Company under the direction of Captain Bauer, who was formerly with Fribourg S.S. Company, Parry Navigation Company, and American Liberty S.S. Company, will engage in shipping cargoes on an international scale as well as in chartering, brokerage and ship sales.

Pending procurement of New York offices, World Wide Shipping Company's offices will be located at those of the affiliate company, Forest Products, Inc., Newark Tidewater Terminal, Port of Newark, Newark 5, New Jersey, with the following telephone numbers: MArket 3-6940, MArket 3-4946.

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Ship Operators and Owners Association Elects Officers

At the annual meeting of the Ship Operators and Owners Association, held last week at the New York Maritime Exchange, the following officers were elected for the coming year:

William J. Rountree, of William J. Rountree Company, Inc., president; F. Riker Clark, of American Foreign Steamship Company, vice president; Robert Strange, of Strange, Myers, Hinds and Wight, vice president and general counsel; S. E. Rothchild, of Blidberg Rothchild Company, Inc., treasurer; Helen E. McManus, of Strange, Myers, Hinds and Wight, secretary and assistant treasurer. Three governors, D. S. Morrison, of American Hawaiian Steamship Company, C. W. Ulsh of North Atlantic and Gulf Steamship Company and T. E. Bradley of United States Navigation Company, Inc., were also elected.

The association adopted a plan for the operation of tramp shipping.

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Master Mariners Elect Lawrence President

The Council of American Master Mariners, New York, at a recent meeting, elected Captain Ray W. Lawrence, marine surveyor with Appleton & Cox, Inc., president of the organization.

Captain George Wauchope, executive vice president of American South African Line, was elected first vice presiden; Commodore Harry Manning, commodore of the U.S. Lines' fleet and master of the AMERICA, second vice-president; and Captain Thomas W. Sheridan was reelected secretary-treasurer.

The following men were elected to the executive committee: Captain Edward C. Holden, U. S. P&I Agency; Commodore Thomas Blau, marine superintendent of Grace Line; Captain Schuyler Cummings, marine superintendent of U.S. Lines; Captain T. C. Conwell, operating manager, American Trading and Production Corp.; and Captain George Fried, retired head of the BMIN in New York.

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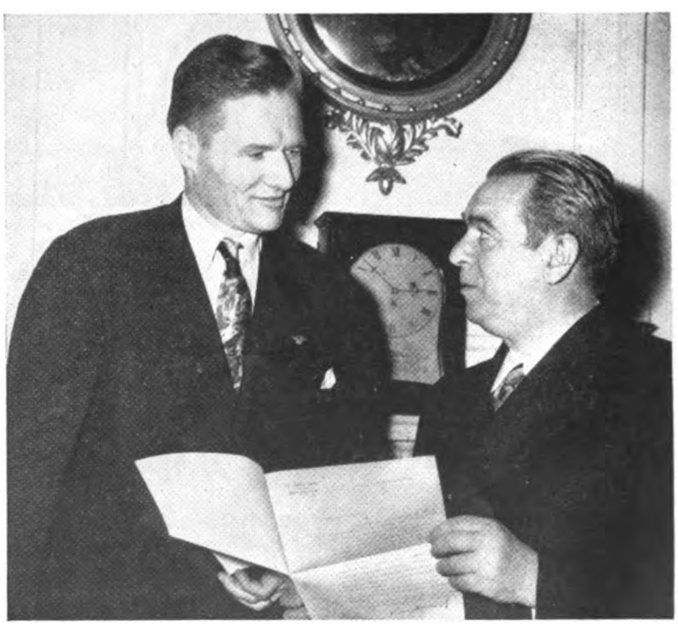

THANKS FROM FRANCE . . . CAPTAIN ALLAN C. SMITHIES, master of the United States Lines' freighter AMERICAN LEADER, delivers a letter from President Vincent Auriol of France to MAYOR WILLIAM O'DWYER of New York. This letter expressed the appreciation and thanks of the French people to the citizens of New York City and the United States for the food sent to their country as part of the Friendship Train collection. Captain Smithies' ship, the AMERICAN LEADER, carried the first shipment of Friendship Train food to France.

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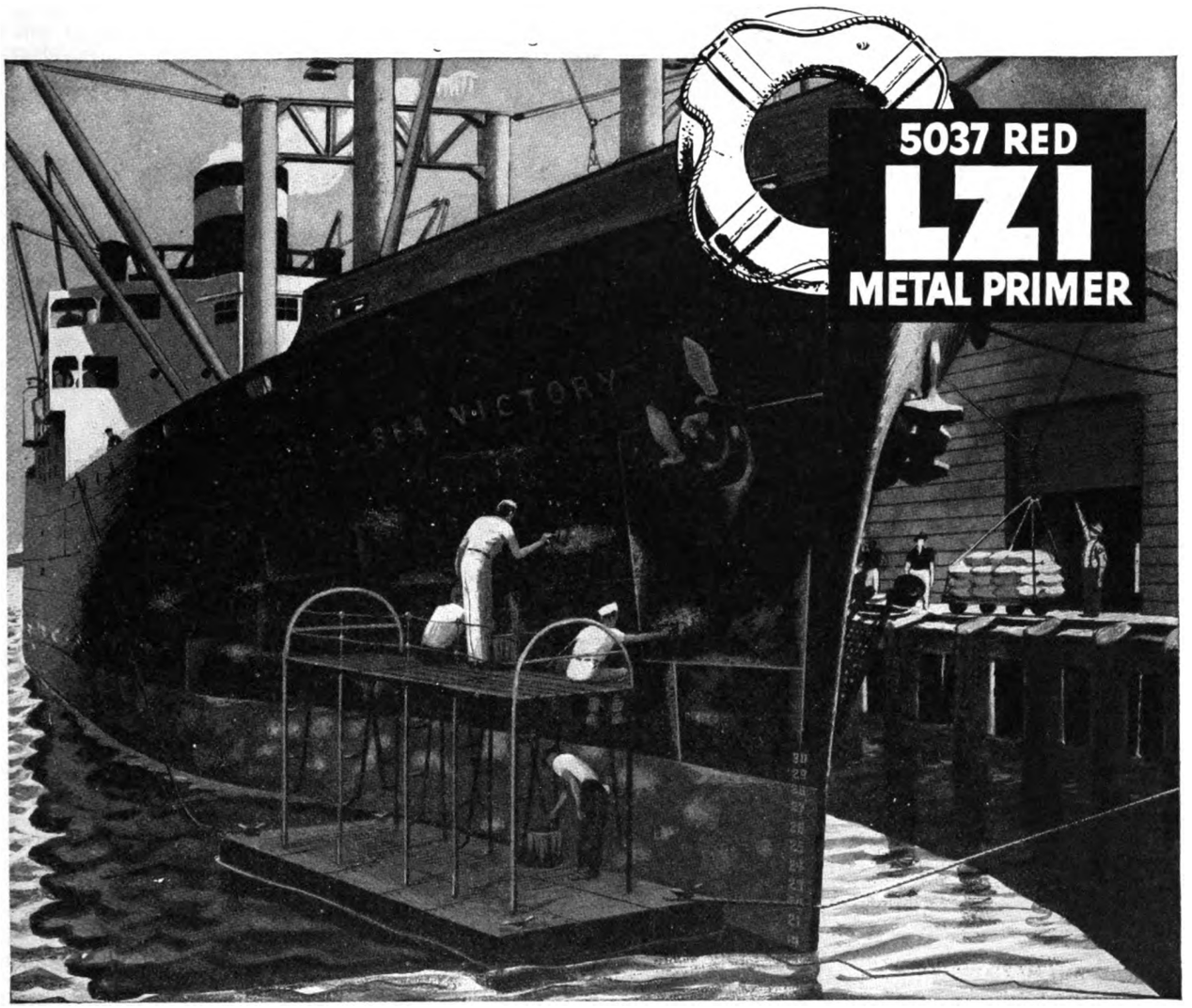

NOW — higher rust inhibition — lower maintenance cost

Three-year tests prove Fuller's new composite metal primer saves three ways over single pigment inhibitors

Here's the *three-way saving* 5037 Red LZI Metal Primer gives you: 1. Lower initial cost. 2. Lower application cost. 3. Less creeping, which means (a) longer rust inhibition and (b) less frequent and smaller spotting to do, or, lower maintenance cost.

Application briefs: LZI slips easier under brush, has lower sheen, better tooth and its duller, browner color is easier to hide with a finish coat. You win all around!

New product? Yes, postwar—but, LZI (lead, zinc, iron!) Metal Primer comes from three years of the toughest tests that technicians could give it. Already, users are saying, "best primer we have ever seen." W. P. Fuller & Co. Branches and Dealers in all Pacific Coast ports, including Alaska.

NOW—74% new or improved qualities!

Boot-topping
Bottom Paints
wood and metal

Cabin Finishes
Canvas Dressing
Deck Lacquers

Deck Paints
Funnel Paints
Engine Room Enamels

Hold Paints
Metal Primers
Topside Finishes

Hull Finishes
Ventilator and
Signal Colors

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SHAFT ALLEY (continued) Chatter

Grace Shoreside Operating Personnel in San Francisco

Shoreside operating personnel of Grace Line's San Francisco office is comprised of many old-timers with the Grace Line and along the San Francisco waterfront.

GEORGE T. LITTLEJOHN—Operations manager—twenty-one years with Grace, Mr. LittleJohn has served in almost all departments, including accounts, claims and insurance and has gone to sea as a purser.

GEORGE WILLIAMS—Operations assistant—oldest Grace employee in San Francisco in point of service, having joined the firm in 1908. He has been to sea as a purser and has occupied many positions ashore.

JOHN A. TOMLIN—Operations assistant—Mr. Tomlin is a 20-year man with Grace, having gone to sea and later working ashore in freight operations.

D. E. KOKJER—Operations assistant—another former seagoing purser, Mr. Kokjer became a Lieutenant Commander in the United States Navy during World War II and has served Grace ashore since the end of hostilities.

E. T. SENTER—Marine superintendent—Ed Senter is one of the beloved old-timers of the San Francisco waterfront, now in his thirty-second year with Grace. He started as an engineer with the old Pacific Mail and joined Grace when that firm bought the Mail line in 1915. He has been marine superintendent twenty years.

SAN FRANCISCO SHORESIDE OPERATING PERSONNEL FOR THE GRACE LINE. Top row, left to right: GEORGE T. LITTLEJOHN, Operations Manager; GEORGE WILLIAMS, Operations Assistant; JOHN A. TOMLIN, Operations Assistant.

Middle row, left to right: K. E. KOKJER, Operations Assistant; E. T. SENTER, Marine Superintendent; CAPTAIN P. H. GALLAGHER, Port Captain; E. J. GRAFF, Port Engineer; A. G. COBBETT, Port Steward; RALPH C. ROSE, Purchasing Agent; GEORGE EUBANKS, Port Purser; A. C. HOLSTEN, Terminal Superintendent.

CAPTAIN P. H. GALLAGHER—Port captain—Captain Gallagher was 22 years at sea, prior to 1941 when he came ashore to become port captain at San Francisco for Grace. Among his commands were the ss SANTA TERESA, PACIFIC OAK and SILETZ.

E. J. GRAFF—Port engineer—Ed Graff started out as a junior engineer on the VENEZUELA for the Pacific Mail, sailed on the ss CONDOR, CAPAC and FLYING CLOUD and came ashore in '41 to become port engineer for Grace. He is a member of the board of governors of The Society of Port Engineers, San Francisco.

A. G. COBBETT—Port steward—Al Cobbett has been port steward three years for Grace. Previously he was in the steward's department on the Matson ss MONTEREY for five and one half years and, earlier, sailed for the Panama-Pacific line, serving from 1928 to 1938 on the ss PENNSYLVANIA for eighty intercoastal voyages between San Francisco and New York. He has been through the Panama Canal 421 times.

RALPH C. ROSE—Purchasing agent—Mr. Rose has been in this position five years. Previously he was assistant purchasing agent at San Francisco for the Kennetcott Cooper Company.

GEORGE EUBANKS—Port purser—Mr. Eubanks joined Grace in 1932, served on the ships and came ashore in 1945 as port purser and shipping master.

A. C. HOLSTEN—Terminal superintendent—Mr. Holsten is another popular Grace fixture, having been on the San Francisco waterfront in charge of stevedoring for that firm for 30 years.

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Waterman Opens Detroit Office

The Waterman Steamship Corporation of Mobile, has opened offices in the Book Building, 1249 Washington Boulevard, Detroit, Michigan. With the opening of the Detroit offices, Waterman now has a total of 23 branch offices located in strategic industrial centers throughout the United States and its possessions. The new offices are under the direction of Robert L. Lochhead, formerly assistant district manager at Waterman's Boston offices.

Waterman's world-wide network of shipping services now include regular sailings between United States Atlantic and Gulf Ports and Ports in the United Kingdom, Continental Europe, Mediterranean Ports, Philippine Islands, China, Japan and other Far East destinations; Mobile and New Orleans and Puerto Rico; Coastwise between Atlantic and Gulf Ports and Intercoastal between Atlantic and Pacific Coast Ports via the Panama Canal. Waterman's coastwise service is operated by its subsidiary, the PAN-ATLANTIC STEAMSHIP CORPORATION, and its intercoastal service is operated under the name ARROW LINE.

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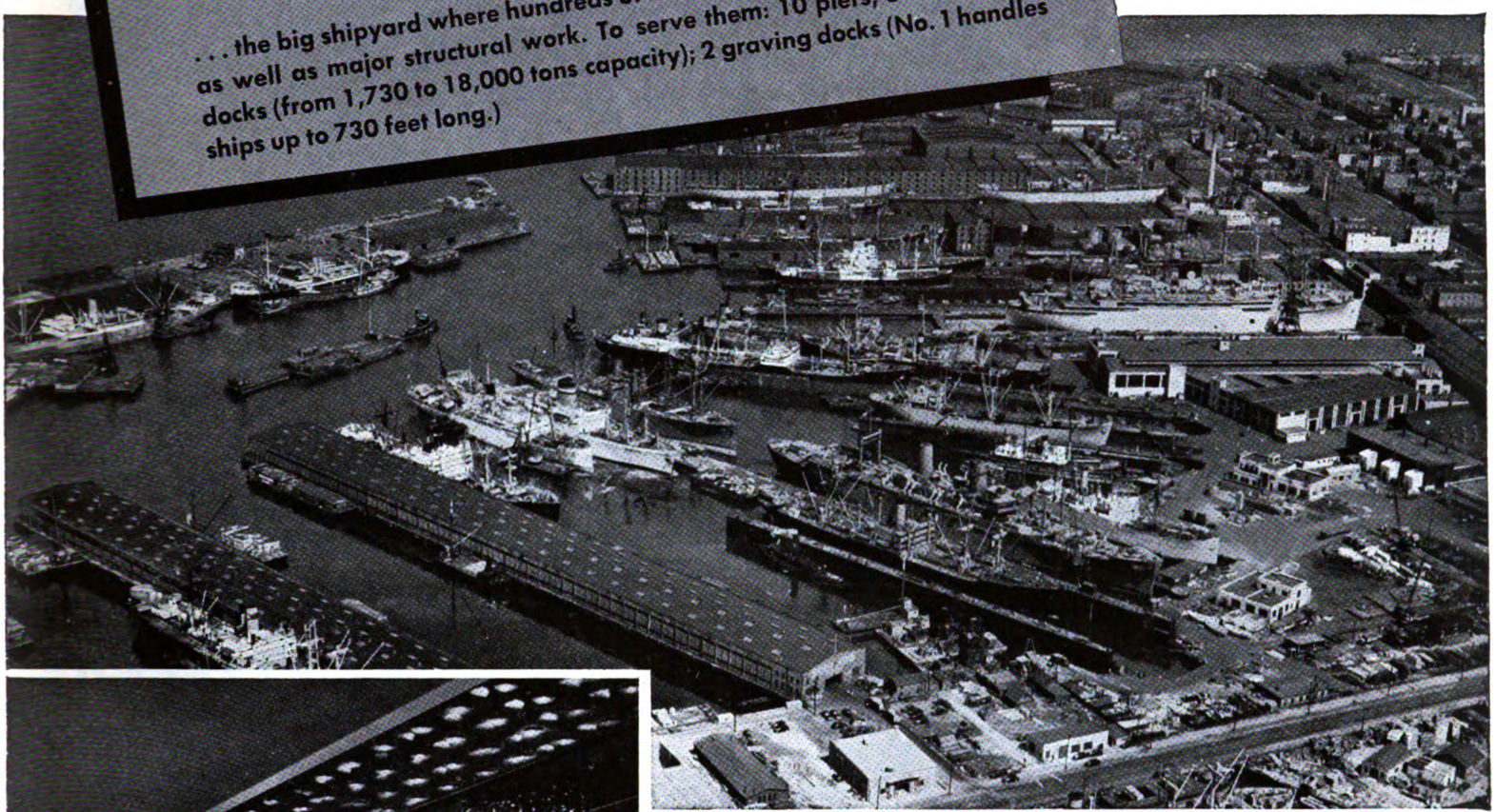
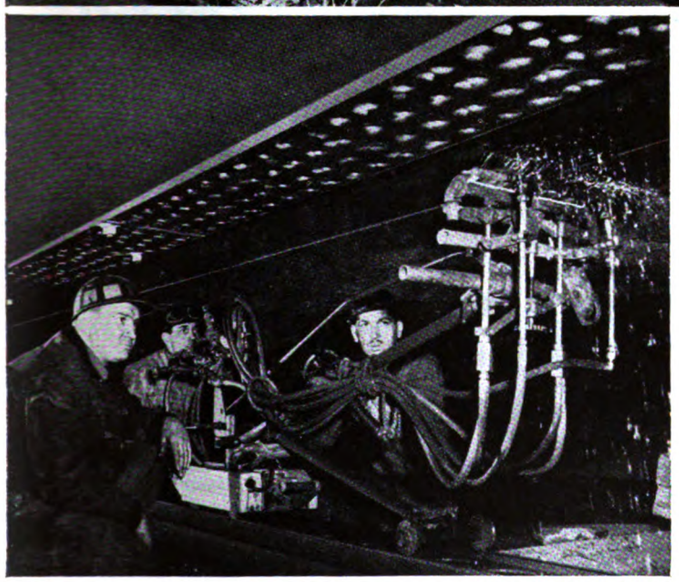
At the hub of the world's busiest harbor . . . TODD, Brooklyn

. . . the big shipyard where hundreds of vessels put in for routine overhaul as well as major structural work. To serve them: 10 piers, 5 floating dry docks (from 1,730 to 18,000 tons capacity); 2 graving docks (No. 1 handles ships up to 730 feet long.)



Air view of Todd's Brooklyn yard, situated at the foot of Dwight Street, directly accessible from Upper New York Bay.



• Stress-relieving of welded structure. A Tanker's Bottom. Tracks guide complicated Acetylene Heating Apparatus as workmen carry out stress relieving operation on critical areas of the vessel's shell. A typical example of Todd's specialized equipment.

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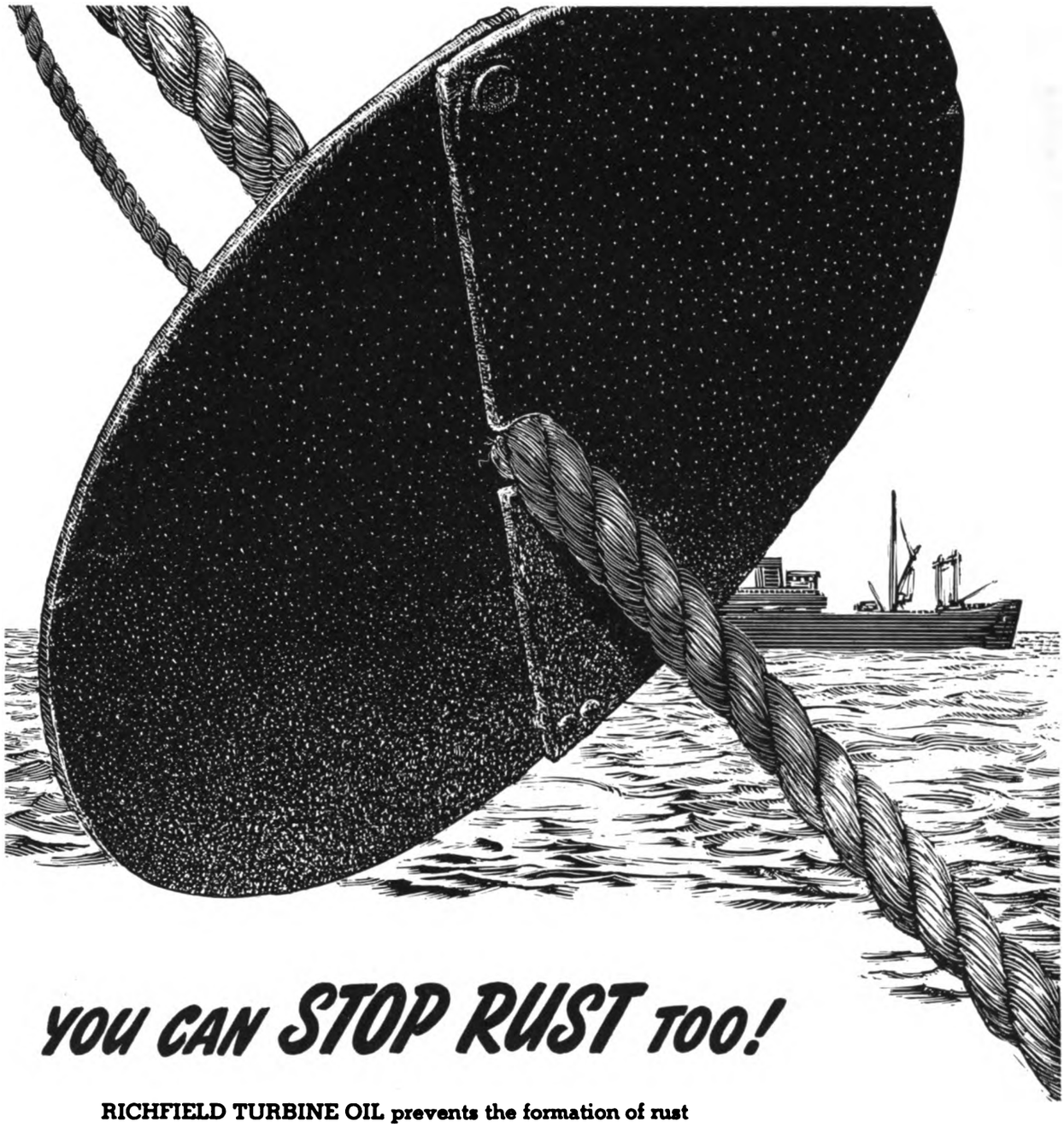

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the LOG
OF AMERICA'S MARITIME INDUSTRIES
Shipbuilding Naval Architecture
Ship and Port Operations
Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

MARCH, 1948 Vol. 43, No. 3

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Editorial Features

FOREMEN AND MANAGEMENT ENTER NEW WORKING RELATIONSHIP 33
Other Industries Find These Steps Essential 33
Do You Know What Foremen Are Thinking? 34
Why Foremen Feel The Way They Do 35
Twice Told Tale—Foremen Are Management 38
Washington Reporting 40
Carrier to Cargo Ship 42-43
General Cargo Handling—Developments and Solutions 44
Reconverting LST Into Sea-Going Carrier 46
Lubrication of Main Propulsion Power Plants Aboard Ship—Part II 52
Are You Getting The Best From Your Radar Equipment? 54
The Society of Port Engineers 56
Operating Ideas
How To Improve Performance of Your Boiler Feed Pumps 58
Simple Form For Calculating Trim and Stability 60
Cargo Devices Shown at Lake Shore Demonstration 66

Departments

Shaft Alley 20-28
The Society of Port Engineers 56-57
Operating Ideas 58
Ports 62

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Appropriations Committee Clarifies Subsidy Limitations

Representative Wigglesworth of the House Appropriations Committee, appended to the Independent Office Appropriations Act the following clarification of his Committee's action last year limiting subsidy committments to an annual basis:

"The Committee is informed that there has been some disagreement between the Bureau of the Budget and the Maritime Commission as to the effect of the contracting powers of the Maritime Commission of the action of Congress on Maritime Commission funds in connection with the 1948 Act with particular reference to operating-differential subsidies. The only purpose of the Committee in its recommendation to the House was to restrict the funds of the Maritime Commission to an annual budget basis and therefore to secure adequate accounting and budgetary control.

"The language of the Appropriations Act followed almost verbatim the language reported by the Committee on Appropriations to the House in initiating the bill. In the drafting of such language, there was not intention to change—either to limit or expand—the contracting powers of the Maritime Commission with respect to such subsidies except for the amount that may be obligated for payment during the fiscal year 1948."

ATS Investigation SCAJAP Reports

The Army Transportation Service in Washington is investigating reports received from the Orient that SCAJAP vessels are being used for the transportation of non-military supplies between the Philippine Islands and Japan and between Korea and Japan. The Army has adopted a policy of allowing no civilian cargoes to be transported aboard Army vessels.

Socony-Vacuum Acquiring Seven New 26,000-Ton Tankers

Socony-Vacuum Oil Company, Inc., have completed negotiations for acquiring seven new tankers, larger than any now in use in the company's fleet as part of a long-range program to relieve the drain on oil resources of the United States.

The tankers will be used to transport crude oil from the Middle East and from South America to Socony-Vacuum refineries on the East Coast. This will in turn make crude oil from Gulf Coast states available to the company's refineries in Texas and the Middle West.

Each of the tankers will be of 26,500 tons dead weight and will have a capacity of more than 200,000 barrels (8,400,000 gallons). The keel for the first of the new tankers will be laid late this spring with delivery of the first expected in the early summer of 1949. Pending delivery of the new vessels, Socony-Vacuum has several tankers under charter for importing crude oil from its producing areas abroad.

The new vessels will be capable of 16 knots at a normal shaft horsepower of 12,500. They will be powered by geared turbine engines, will be 628 feet in length, 82 feet wide and with a draft of 32 feet, enabling them to use the majority of ports which now accommodate the T-2 tankers. The vessels will be constructed by the Sun Shipbuilding & Drydock Company in Philadelphia.

Oldest Oil Company In America Buys T-2 Tanker

The Jenney Manufacturing Company of 12 India Street, Boston, Massachusets, purchased the T-2 Tanker SEVEN PINES which has been re-named the CHARLES S. JENNEY. Assisting in the purchase of this tanker for the Jenney Manufacturing Company was Captain Soren Willesen, who will supervise the operation of the vessel from Lake Charles, New Orleans to the storage plants of the Jenney Company in Boston.

The firm of Theodore E. Ferris & Sons, Naval Architects and Marine Engineers, wrote the specifications and supervised the repairs for the reconditioning of the ship at Bethlehem's Hoboken plant in New Jersey.

Lykes Vessel Makes Rescue In Visayan Sea

The vessel DICK LYKES steamed into New Orleans in January after running a gauntlet of perilous seas in the Pacific and making a dramatic rescue in the Visayan Sea near Cebu.

The ship, skippered by Captain R. H. Ohlund, weathered a slugging typhoon in the Pacific and went on to save the lives of 10 Visayan Filipinos who were pitched into the sea when smashing winds overturned their schooner on December 19.

Henry B. Harrison, Jr., third mate aboard the Lykes ship, spotted the men through his binoculars as he was taking bearings and plotting the ship's position.

Members of the Filipino schooner crew, including eight boys, were clinging desperately to the sides of a 70-foot schooner which had been capsized. The DICK LYKES transported them to Cebu where they received medical attention.

Nervion Line Reopens Gulf-Spain Route.

With the sailing of the motorship, MAR CANTABRICO, the Nervion Line regular monthly service from United States Gulf ports to Spain and Portugal has been reestablished. Kerr Steamship Co. is the United States general agent for Nervion.

Schedules call for the MAR NEGRO to sail from New Orleans and Galveston to the ports of Barcelona, Cadiz, Seville, Lisbon, Vigo, Gijon and Bilbao.

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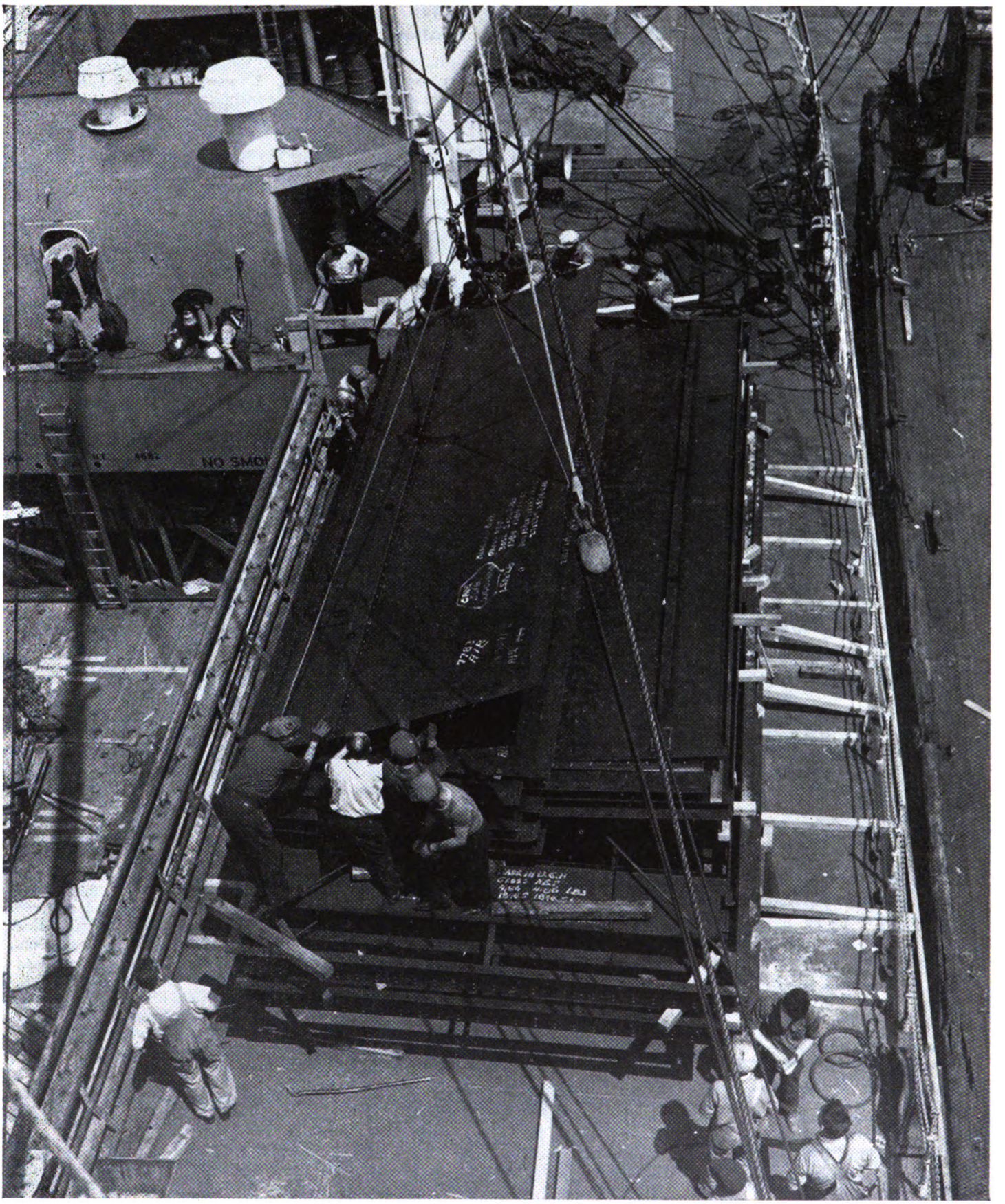

A FOUR MILLION DOLLAR INVESTMENT . . .

the walking boss has charge

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FOREMEN AND MANAGEMENT ENTER NEW WORKING RELATIONSHIP

WEST COAST SHIP OPERATORS CAN MAKE IT SUCCEED SAY FOREMEN, EXECUTIVES, IF—

The West Coast maritime industry has taken its first step toward a new era in industrial relations which is rapidly assuming nationwide significance. The results will not be immediate, any more than the causes were immediate. But nevertheless, the industry has taken the first step, and given a few years of intensive effort, it will be able to walk on its own. The steamship industry is not the first to take this step, but it is among the first, and like the others who are trying, it will be among the first to benefit.

Not all the components of West Coast steamship management realize the significance of the step they have taken. It was forced upon them through circumstance. But already they have seen tangible results. The danger lies in satisfaction. "This first step should not be the last," said one West Coast steamship official. "If management drops the ball now it will have destroyed its one opportunity to become a flourishing industry."

What was this first step? STEAMSHIP MANAGEMENT OFFERED ITS FOREMEN SOMETHING BETTER THAN THE UNION COULD OFFER OR HAS EVER ASKED FOR! This fact has tremendous significance. Management does not want to bargain collectively with its walking bosses and it has recognized that to eliminate the union it must first eliminate the *need* for a union.

As yet management has not succeeded in replacing this need, nor will it for several years to come. History does not easily relent. For years management pushed labor around. And then labor fought viciously until it had won, bit by bit, what it has today. When it got the upper hand, labor started doing the pushing.

Men will not quickly forget how bitterly they fought for what they have. The price they paid was not cheap. They will not welcome the company with open arms because it has made one move toward friendliness. But given time they will develop the loyalty the company needs.

There are a few outstanding examples which steamship management can follow in its pioneering voyage into *human relations*. One of them, a company listed among the largest corporations in the world, has recognized the fundamental problems of labor *and is doing something about them*. A few of the truths which this company has established are as follows:

1. The company's most valuable asset is its people—*the human element.*

2. The company's foremen spend more time at work than they do with their families and friends.

3. Past mistakes and bad habits cannot be corrected in a matter of days. *It takes time.*

4. The company cannot possibly have good relations *outside* the organization unless it has good relations *inside* the organization. Good internal relations can only be attained through a planned program of *management relations.*

5. The main objective of the company's program is to shape the thinking of its foremen. These men must be made to understand that the company is interested in their welfare as *human individuals,* that the company is a *good* place to work, it is *fair* in *all* of its dealings, and especially that the company is keeping them informed about *what* it is doing, *why* it is doing it, and *how* it will affect *them.*

6. The company puts special stress on the fact that to accomplish this program requires *action,* not *words.*

Another major industrial company, located on the West Coast, has had a similar program underway for several years. As a result of its program, it has seen a substantial gain in efficiency and resulting profits, something which it believes is the inevitable result of a sound program of management relations.

When one of the executives of this company was asked if the program had paid off, here is what he answered: "Before we started this program, most of the people who worked for us did not like us. We figured that a man could give us as little as forty percent of his working capacity and still manage to keep his job. Since we started this program there has been a steady improvement in efficiency. Now we estimate that we are getting seventy percent of a man's working capacity, which is just about tops. That's a thirty percent increase in efficiency.

"But for the sake of argument, to be on the safe side, let's take a third of that. Say we had only increased the efficiency by ten percent—with an annual payroll of $30,000,000, that amounts to a $3,000,000 saving, while the cost of the program was negligible. I'll say it's paid off!"

The report, presented here in a series of short articles, was written by the Editor of The LOG following personal discussions with a large number of walking bosses and steamship company executives on the Pacific Coast over a period of several weeks.

It is a report of facts and opinions as told to him by the men involved. It is published by The LOG with the aim of helping in the development of better management-labor relations in Atlantic and Gulf Coast shipping as well as in the Pacific Coast maritime industry.

OTHER INDUSTRIES FIND THESE STEPS ESSENTIAL

There are several points of major importance in establishing a program of management relations in the maritime field. The following points have been found important by those companies which have started similar programs in other fields: (1) The program must be initiated at the top level of management. (2) It must be considered as an integral, vital function of management. (3) It must be carried out with genuine resolve to make it work all the way down to the bottom. (4) It must be given time to work—time to correct the errors which have been made over many years. (5) It must be done on a company-wide—not an industry-wide—basis.

Most companies have consulted with recognized firms of consultants and established their own programs to fit their own needs. Here are a few fundamental things which other industries have found essential to good internal relations:

(1) Reestablish personal relationships with your foremen. Take the trouble to make these men *feel* a part of management. Give them a *company* paycheck and let their immediate superior *hand* it to them.

(2) Be sure at all times to maintain pay equity. Foremen should always make substantially more than any man working under them.

(3) Provide for systematic promotion. A program should be worked out for promotion which is based upon service and ability. Don't let your foremen go to the union to get more money—tell them in advance how and how much they can earn by top performance.

(4) Take care of the "little things" which make your foremen a part of management. Remember, money isn't everything. Give your foreman an office, a desk and a telephone. If you have a

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FOREMEN ARE MANAGEMENT

company directory, list his name there. Give him vacation with pay and sick leave. These things "set him aside" from the men who are working for him.

(5) Give your foremen responsibility, authority, and backing. Responsibility without the authority to carry it out is worthless. If management stands behind its foremen, efficiency will be greatly improved.

(6) Clearly define your foremen's position in the organization. Make sure each foreman knows *exactly* what his duties and responsibilities are, and exactly who his superiors are.

(7) Keep your foremen informed. It is amazing how quickly "inside information" can make a man part of management. Be sure your foreman knows at all times what is going on. If he *knows* what is happening he can quickly spike rumors and the prestige of *knowing* will set him far above the men who are working for him.

(8) Hold regular meetings to discuss problems and policies. Your foremen are as important as your Board of Directors—and for a long time you have recognized the importance of Board meetings. Get your foremen together to discuss *their* problems.

(9) Permit your foremen to participate in company affairs. Your foremen can be extremely helpful to you. Attach importance to what they discuss at their meetings. They are more familiar with the men who work for them—their ideas can be helpful in labor-management negotiations. This will take them out of the category of "labor" which they have been in for so long.

(10) Get out and rub elbows with your foremen. A word of praise where it is due from some member of top-level management can get you what money can never buy—loyalty and initiative. In talking this point with officials of some of the leading steamship companies, they readily agreed that they themselves appreciated praise. Your foremen are no different.

(11) Your foremen are human beings. Think of them that way. In nearly every case their reactions will be the same as yours. Make a habit of putting yourself in their place and your judgment will nearly always be right.

(12) Get going! Don't just talk about these things, or just think about them—go ahead and do them! They'll pay off.

DO YOU KNOW WHAT FOREMEN ARE THINKING?

"Nuts," Joe Taylor growled. "So we're part of management now, are we? That's really a laugh. Ever since the '34 strike the walking boss has been a bastard at a family reunion!"

The group of walking bosses gathered in the saloon of the C3 drinking coffee nodded in agreement. George, a tall, husky fellow, spoke up. "Two days last week I sat by the telephone at home waiting for work—no pay. Three weeks ago I didn't work for a whole week—still no pay. Does that make me part of management?"

Joe Taylor said, "They don't want us to have a union, but they'll never give us what we need until we have one. If they'd make us part of management instead of just hollering about it when they think we're going to strike for a union, then we'd have something."

A slim, black-headed walking boss the others called Charlie joined the discussion. "I've been working for this company ten years," he muttered, "and they can't even take the trouble to hand me my paycheck. That comes from the Waterfront Employers Association. When the longshoremen went on rotational hiring the companies set that outfit up to handle the accounting. Fine. They needed it. But what happens to the walking boss? We still work for only one company but they couldn't be bothered with us so they shoved us along over to the WEA just like the guys who work for us. Do *they* think we're part of management? Nuts!"

"Look at it this way," George broke in. The Company says we're bosses. We're supposed to boss the gangs. The guys we're bossing belong to a union. Before they made us 'foremen' we were longshoremen, too, and belonged to the same union. But supposin' we get fired as walking bosses because some guy doesn't like the way we part our hair—what are we going to do? We gotta go back working in the gangs which means we gotta have a union card. So after we become walking bosses we still gotta belong to the ILWU even though we're supposed to be bossing the other guys in the union who hold the same card."

"Yeah," Taylor said. "And what did management do for us? They're so damned scared of the union we can't even fire a gang if they lay down and go to sleep. We want something moved on deck so we walk up to a gang leader and say, 'please boys, would you mind moving that beam over to the starboard side if you don't mind please,' and some guy pipes up and tells us to go to hell and a few other places. That's what they call a boss! And when the employers finally decide to get tough with the union they come down and tell us to fire a gang if we don't like 'em. Two gangs were fired on the San Francisco waterfront after they said that—just two. But the word passed around in a hurry and all of a sudden the gangs are very respectful to us. But did the boys up in the front office do anything until they thought we were going to be represented by the union? No! And will they do anything when the ruckus dies down and they're coddling the union again? No!"

What Do They Really Want?

Someone poured more coffee and the group was quiet for a while. The man who had provoked this discussion, and until now had kept out of it, planted another question.

"What do you fellows really want?"

The answer was unanimous, "Security!"

"What do you call security?"

"Well," Taylor scratched his head and

"Ever since the '34 strike the walking boss has been a b——d at a family reunion."

wrinkled his brow in thought for a moment. "There's a lot of things we want. First of all, the guaranteed monthly wage and overtime, same as the mates and engineers have got. The Company's already given us that after they thought we were going to have the ILWU represent us. But there are other things. I think we should go back to work for the Company and get our paycheck from the Company and leave the Waterfront Employers for the longshoremen. And each company should have a board consisting of management and walking bosses to review a guy's story if he's fired."

"What about seniority?"

"That," Taylor said, then paused to think about his twenty-five years with the Company. "A man should be paid half on ability and half on seniority. The Company's in business to make money and we're supposed to be here to make money for 'em. Just because a guy's been around for a long time doesn't say he's better than the next guy who hasn't been around as long. If things get tough for the Company and they have to lay off some men, then the board would decide who is to go and who stays."

"And if you had these things you wouldn't need a union?"

This question provoked a few scowls.

"Let's get this straight," Charlie said flatly, "We don't want to belong to the ILWU. We have to for security in case we're fired but it's not easy to boss the men when you're in the same union and they can haul you up on charges. It wouldn't have worked for the ILWU to represent us as walking bosses. The union is out to break down the relations between the Company and the walking bosses. If they represented us the first thing they'd do is start rotation of hiring —and brother that won't work for walking bosses! So we got our own union. Maybe we don't need it—and then again maybe we do. The Company's feeling pretty generous right now, but that ain't saying how long it's going to last."

George chimed in with a tart comment, "We been taken before and we don't figure to be taken again. If the Company plays square with us the union will die of uselessness. But if it don't—well, the union is there and we can use it as we see fit."

Taylor had been looking thoughtful while Charlie talked. "Don't forget," he said, "pork chops ain't everything. We gotta have 'em, but there's other things besides."

"For instance?"

"Well, we gotta be backed up. The Company's gotta stand behind us and give us the authority we need to do the job. We should be able to fire a gang if they don't work—and if the union pulls a quickie because they don't like it, the Company's gotta let 'em strike until they're ready to go back to work. And there's other things, too. Little things, maybe, but as I said, pork chops ain't everything."

What About the Waterfront Communists?

The man who was directing the conversation placed another question. "Tell me," he said, "what you fellows think about the waterfront Communists. During the course of the year nearly every longshoreman on the waterfront passes under you—what would you say, as an estimate, is the percentage of Communists in the ILWU?"

Taylor's answer was immediate. "Not over ten percent. A wild, outside figure would be fifteen percent, but it's closer to ten."

"Do they give you much trouble?"

"Some. But every walking boss on the waterfront's got 'em tagged. We know every last one of 'em and watch our step."

George looked disgusted and growled, "they're a bunch of lousey b——s. They make a lot of trouble for everyone. One of 'em on a ship can foul up the whole works."

Joe Taylor weighed his words carefully. "There's no doubt that most of the trouble on this waterfront is caused by the Commies. But we got a way to fix 'em for good, if the Company would back us up. What's their tactics? They're still on the payroll, but they're not working. When a guy doesn't work, the logical thing to do is to fire him. So when a gang stops working, if we fired 'em, it wouldn't be so good for the guys. They wouldn't make any money. And we figure it wouldn't be long before they said to hell with these Commie guys and buckled down to work. Most of the gangs are good Joes, but they're human —they ain't going to work if they don't have to.

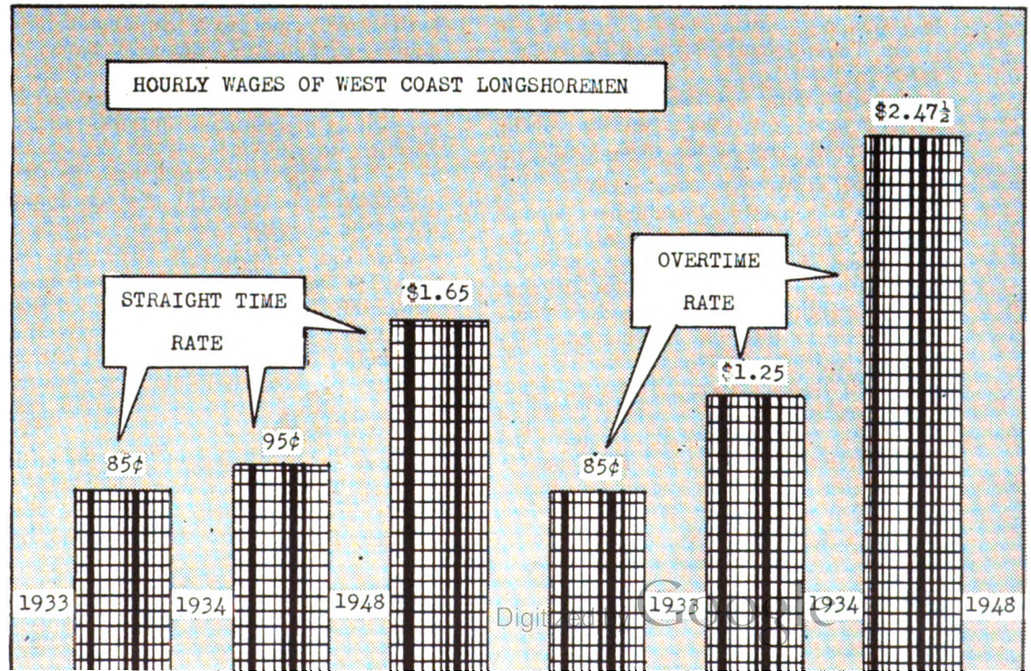
"I say if a few gangs get fired the Commies will lose most of their influence. You just can't get away from the fact that if you're going to be boss you got to be the boss. For the Company to put a man in charge of a several million dollar ship and then not give him the authority to control it ain't good sense. But they gotta have the guts to stand up to the union—and that's something they never did until just recently. When they did, the union backed down. If they stick to their present policy, and let the union know they can't be buffaloed, we'll keep the ships working. If they let the union continue to bluff 'em —well, they might as well close down the waterfront right now."

WHY FOREMEN FEEL THE WAY THEY DO

Things were tough. The majority of the longshoremen turned out in the cold, gray hours before dawn to report to the waterfront in hope of a day's work. Company agents looked over the offering and selected their gangs. The rest moved on to see if some other company could use their services, but rarely did they find work if they weren't picked in the first crew. They went home, or to the nearest waterfront bar, but no matter where they went they earned no money that day. Some averaged as little as ten dollars per week. Others worked long hours and made a decent living. This was 1933.

Charlie was a longshoreman then, and things weren't so good for him. He'd been around quite a while and seen a lot. He was a youngster when the Riggers and Stevedores Union went out on

"If this is Communism let the shipowners make the most of it."



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strike in 1916. But he grew up fast after the 1919 strike smashed the union. Times were tough generally around the country, but on the San Francisco waterfront they were toughest. There were too many longshoremen. For every job there were ten men trying to get it, and the competition among the men was ruinous. The situation was at its worst in 1934.

The previous year the International Longshoremen's Association, affiliated with the American Federation of Labor and long dormant on the West Coast, came to life. The men were dissatisfied with the Longshoremen's Association of San Francisco, and those who were unable to obtain work threw in with the ILA. This AFL union demanded of the Waterfront Employers Union (now Waterfront Employers Association) recognition as bargaining agent. Eventually, after the employers were convinced that the union represented the majority of the longshoremen, recognition was granted.

The ILA immediately presented demands for (1) a wage increase from 85c an hour to $1.00 per hour, (2) limit hours of work to six per day, 30 hours per week over a four week period, (3) hiring and dispatching through a union-controlled hiring hall, (4) coastwise bargaining agreement, and (5) a closed shop. The employers refused and the strike started on May 9, 1934.

What followed is history. Violence, bloodshed, and complete chaos engulfed the Embarcadero. The strike spread. Other maritime unions walked out and joined the longshoremen in the picket lines. Scabs were brought in, heads were busted, cars overturned, shots fired; and above it all rose the gaunt figure of Harry Bridges to clamp a vice-like grip on the waterfront.

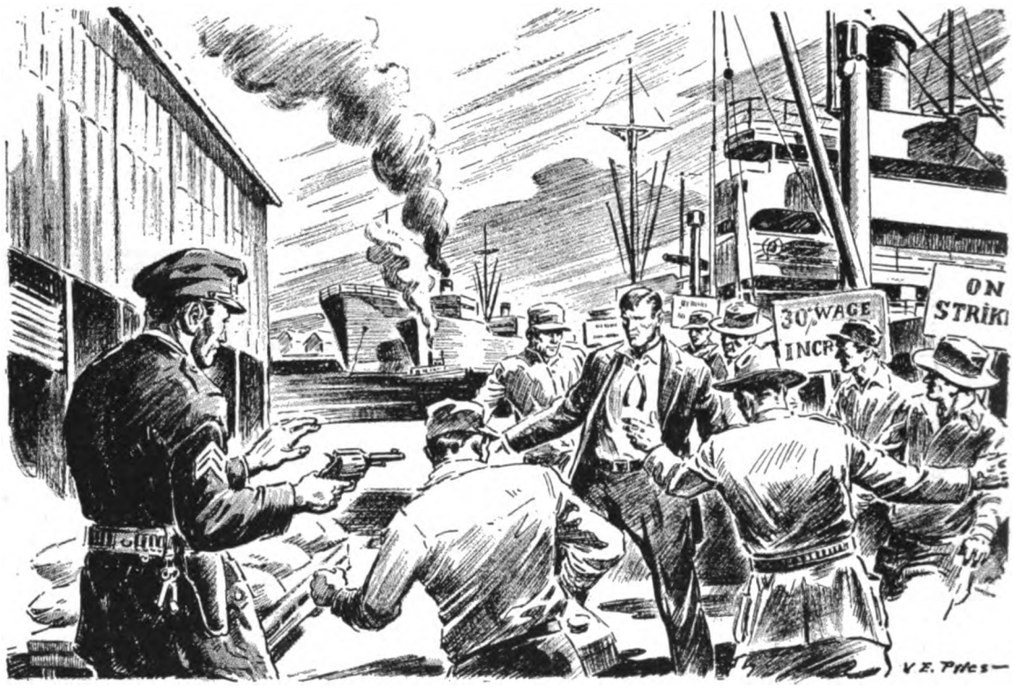
Charlie had nothing to lose and everything to gain. He worked for no one—that is, no one in particular. He knew a few of the bosses who hired the crews, but beyond that the companies were depicted to him as fat men riding in big cars and smoking dollar cigars. All he could lose was his occasional twenty dollars a week. The company had been his enemy for years and it was a kind of relief to join battle with his intangible foe. So Charlie was down there on the picket line with the rest of the men.

A Strike, A Mouthpiece, A Hero

There was plenty of excitement during the Big Strike. Rumors flew around the waterfront faster than they could be manufactured. And the Communist Party was well equipped to mass-produce them. To the Party this was the big chance—the worker's revolution. To the strikers they fed what they wanted them to read. The regular daily newspapers deplored the whole situation and hardly gave the longshoremen a fair break. Consequently, the men turned for information to the only other source, The *Western Worker*, propaganda mouthpiece of the Party. The distortions were there, just as they are today on an international basis, but to the longshoremen they were entirely plausible.

Unfortunately, two men were killed by police bullets in a general melee. This was made to order for the Communists. They staged mass meetings and a funeral for the dead shrewdly calculated to play upon the deepest sympathies of the men. To Charlie, these two men were murdered by police acting as stooges for the shipowners. This incident precipitated the great San Francisco General Strike.

"To the Party this was the big chance—the Workers' Revolution."



Eventually the excitement subsided, but out of it emerged a triumphant union and a triumphant Communist Party. A Communist pamphlet published soon after the strike exulted, "The strike reached its highest point in San Francisco because the influence of the Communist Party in the waterfront unions was strong enough to defeat the reactionary leadership."

How did Charlie feel about it? His thoughts were reflected in a union pamphlet: "The men have regained their self respect and pride in their work. They are better workers and better citizens because of this. If this is 'Communism,' then let the shipowners make the most of it!"

Harry Bridges emerged from the strike a hero. To Charlie, who was not a Communist and more interested in grub than politics, Bridges was the guy who had the guts to stand up to the powerful shipowners. He saw no threat in Communism. It was mere coincidence that the Reds were the ones who engineered the strike—and if anything it was to their credit that they had done so because now he earned 95c an hour, was hired out of a "jointly controlled" hiring hall run by the union, worked a thirty-hour week with the work spread around to give everybody a crack at it, and was paid $1.25 an hour for overtime. Compared to what he had before the strike, the Communists had done all right for him.

During the years which followed, his wages and conditions continually improved. True, he never knew when he went to work in the morning whether or not he was going to be on strike during the day, but by and large it was okay. He sometimes got tired of listening to the Communists rave, but after all, he was doing pretty well now. He worked for the union and got his pay from the Waterfront Employers Association, which handled his pay check because each day he worked for a different company.

Then he got his big break. One of the companies hired him as assistant walking boss. There wasn't much difference, except that he worked for the same company every day. He still drew his pay from the WEA. He still only worked when there was a ship to load or discharge. His pay wasn't much more, sometimes less than it had been when he was packing a hook if it was a bad week. But he had the normal human reaction to being promoted out of the

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rank and file. He was a boss now—or so he thought when he reported for his first job.

It was not long before Charlie learned his place. When the war came along he was made walking boss and then his headaches really began. Several times during the war he was hauled before the union (to which he still belonged) and fined. This was where Charlie began to see through the Communists and to understand some of the motives behind their actions. There was a war on. He was trying to get a job done. And each time he was called before the union it was on charges brought by a known Party member. He soon became wary of the Reds and was able to spot every one of them the minute they walked aboard his ship.

As soon as the war was over, a rash of "quickie" strikes disrupted the waterfront. They were mostly called for any reason or no reason. But once again it was the Communists who were inspiring them. There was no gain for the men. There was only the loss of a day's pay, or whatever part of the day was devoted to striking. Disruption was the only answer.

Then Charlie found himself on a fence. The union, run by Harry Bridges, wanted to represent the walking bosses *as bosses*. He had little choice. He was a union member. And not to string along with Bridges' wishes was to invite explusion. His only alternative was to resign from the union. But the company had done nothing for him. He had no security. He was casual labor. As far as he knew no one in the company except his immediate superior knew he existed. The company accounting department didn't even know where or when or if he worked. On the other hand, the union offered him some security—not much, perhaps, but more than the company did. And there were always those who were reminding him that if there was a change in management, if his immediate superior retired or was transferred or fired, he was only a vague unit of man-hours and very likely the next man would lop him off the payroll. Where would he go? Where could he go? They always had the pat answer for that. There was only one place he could go—back in the hold. And to do that he very definitely must be a union member. So he went out on strike with the rank and file union.

Charlie was a little amazed to find out how important the company thought him. It was a surprise to discover the company considered him a key man in its organization. He had always known it, particularly had he been aware of it that first day he had reported for work as assistant walking boss, but there had never been any indication that the company esteemed him so highly. And now it was proclaiming in a newspaper advertisement that he was so important to its operations it was impossible to even consider dealing with him collectively over the bargaining table—especially through the rank and file union.

For thirteen weeks he was on strike. For thirteen weeks he went along with the union while Harry Bridges bickered with his bosses. He wasn't too keen about it. The strike was costing him more money than he could hope to make up for a long time. But he remembered well what it was like before 1934, before the union, and he'd string along with the union. He owed the company nothing—it paid him only when it had work for him and beyond that his affiliations were nil. On the other hand he owed the union much of what he had today. In the final test, his loyalty was with the union, not with the company.

The Long Finger of Harry Bridges

In the end, because even Congress had thought him important enough to pass a law about him, the strike ended in defeat for the union. Immediately several men set about organizing a separate CIO local to represent the walking bosses exclusively. The long finger of Harry Bridges was behind this move, and the walking bosses still had little choice. They joined the local.

Then the company made an unprecedented move. It offered to put Charlie, and all its other walking bosses, on a guaranteed salary plus overtime, similar to the pay procedures of the ships' officers. Furthermore, the company offer was generous, and generally it resulted in a substantial raise. The most important thing about it was that he got paid every month whether there was work for him or not.

Nor was Charlie's company the only one to make such an offer. Nearly every steamship company and stevedoring contractor in San Francisco made the same offer to their walking bosses. The union cried out against it. They claimed it was a hoax of the shipowners to wean the walking bosses away from the union and then give them "the works."

Cause to Pause and Reflect

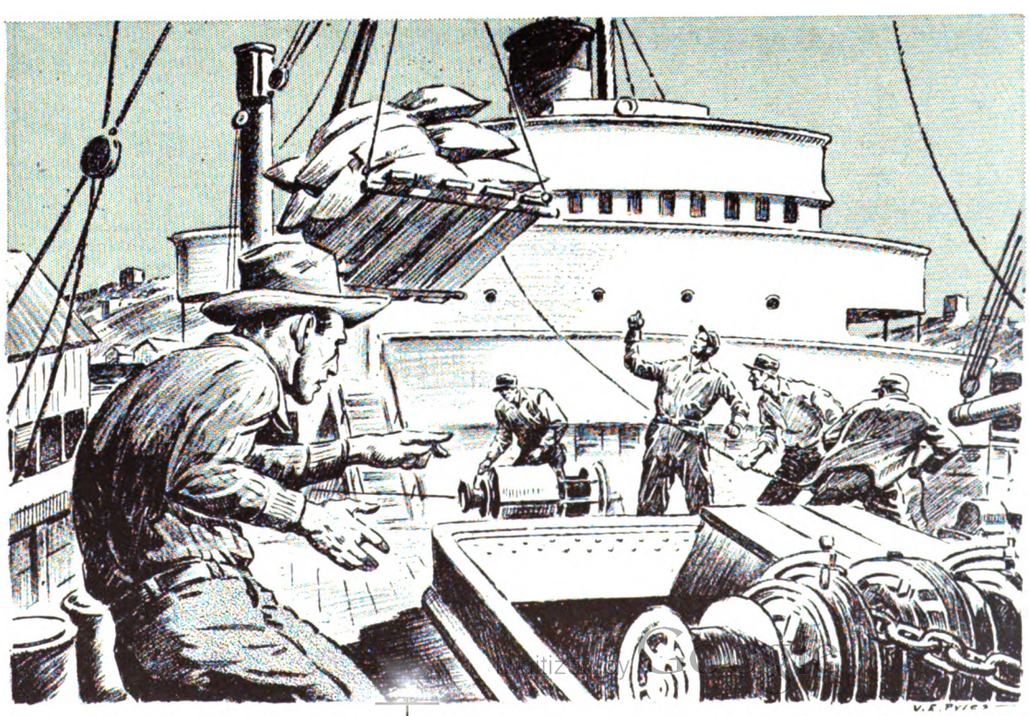
This gave Charlie cause to pause and reflect. Was the company above such a thing? He couldn't be sure. Right now, it was being awfully generous, and he wanted to believe it, but still, could the union be right? Wasn't it possible that the company would give him the guaranteed wage and then forget about him? And what about some of the other things? Would the company back him up—give him the authority he needed to do his job properly? He didn't know. He just didn't know. He wanted to be what the company claimed he was—an integral part of management—but would it remember how important he was when the ruckus died down?

The new local held meetings and the walking bosses from other companies came and they all talked it over. The others felt much the same as Charlie. Even with their own union they realized that Harry Bridges would exercise a great amount of control, and they did not agree with many of the things which Harry Bridges stood for. They thrashed the problem out. The union tried to persuade them not to accept the employers' offer. When the men left the meeting they were still undecided, but they wanted to do the right thing. Charlie thought about it that night and decided to put all his eggs in one basket. The next day he accepted the company's offer, and so did all of his fellow walking bosses.

What about the new union? They'd keep it just in case. If the company was as good as its word, the union would be useless. If it wasn't—well, the union was still around. They would make use of it.

Charlie wanted to, but as yet he didn't trust the company. He'd wait and see.

"Charlie was boss now—or so he thought when he reported for his first job."



A TWICE TOLD TALE -- FOREMEN ARE MANAGEMENT

OCTOBER, 1946—SHIPS' OFFICERS
JULY, 1947—WALKING BOSSES

On September 30, 1947, newspapers in the Los Angeles - Long Beach area carried bold headlines proclaiming a state of siege. Advertisements read "MIDNIGHT SEPT. 30 OUR PORT WILL CLOSE DOWN! NOT BECAUSE OF WAGES—NOT BECAUSE OF WORKING CONDITIONS — BUT BECAUSE STEAMSHIP MANAGEMENT IN THIS PORT BELIEVES THAT THEIR FOREMEN SHOULD NOT BE DICTATED TO BY THE MEN THEY SUPERVISE."

This was the dramatic culmination of a significant strike which began on July 11, when Walking Boss members of the International Longshoremen's and Warehousemen's Union walked off the job with a half-hour warning. The union struck the Luckenbach Line in San Francisco and announced that it intended to "knock over" the steamship companies one at a time. The Waterfront Employers Association, representing the shipping companies, flatly refused to bargain. The crux of the strike was ILWU's intention to force the WEA to recognize that union as the bargaining agent for the Walking Bosses.

With the Taft-Hartley Law and the National Labor Relations Board to back them up, the employers stated in the papers, "Officials of the CIO Longshoremen's Union demand that they be recognized as sole and exclusive bargaining agents for the Ship and Dock Foremen—the *Walking Bosses*—who supervise the loading and unloading of vessels in this port. This demand was rejected because these men, as supervisory employees, are a part of management itself; therefore it does not make sense to have them represented by a union made up of and dominated by the very men they must supervise."

This story had a very familiar ring. It was the same aria management had sung in October, 1946, when the MM&P and the MEBA had struck for a closed shop and resulting "rotation of hiring" which would follow. Then management had suddenly proclaimed to the world that shipboard officers were not only foremen, they were *executives*, they were the sole representatives of management after a ship left port, a closed shop was unthinkable.

With the Walking Bosses, as with the ships' officers, management was right in principle. The two strikes have another parallel—management won both of them. And there is still another similarity of significance — although management was right in principle it had done little in practice to substantiate its claims as to the importance of these groups of men to its operations.

Violence, Disruption and Diversion

The walking boss strike is but one of many which have increased the uncertainties of West Coast shipping to a point where the ports are suffering a serious loss of business through diversion of traffic to other coasts and to other means of transportation where possible. Since the early thirties the West Coast waterfront has been the scene of violence and disruption, some of it political and some of it economic, but nevertheless the end result has been the same. In this most recent strike of ship and dock foremen can be found many of the basic causes of the strident union-management relations, and through analysis of these basic causes, the solution to a problem which all now agree must be solved or West Coast shipping abandoned.

After the union struck Luckenbach in San Francisco July 11, it struck again, closing down the Outer Harbor Dock and Wharf Company in the Los Angeles - Long Beach area and established picket lines. Three days later the individual employers approached the ILWU and each foreman demanding an end to the strike. This demand was promptly rejected.

The ILWU took the stand that it represented the walking bosses, who were ILWU members, and that therefore the Waterfront Employers Association was obligated to bargain collectively with this foreman group. The basis for this contention was a ruling of the Regional NLRB handed down on May 13, 1947 (prior to passage of the Taft-Hartley Act) which certified that the ILWU was the appropriate organization to represent the walking bosses, since the majority of them were members of the union. The WEA refused to bargain with them and the ILWU immediately filed unfair labor practices charges against it claiming violation of the National Labor Relations Act.

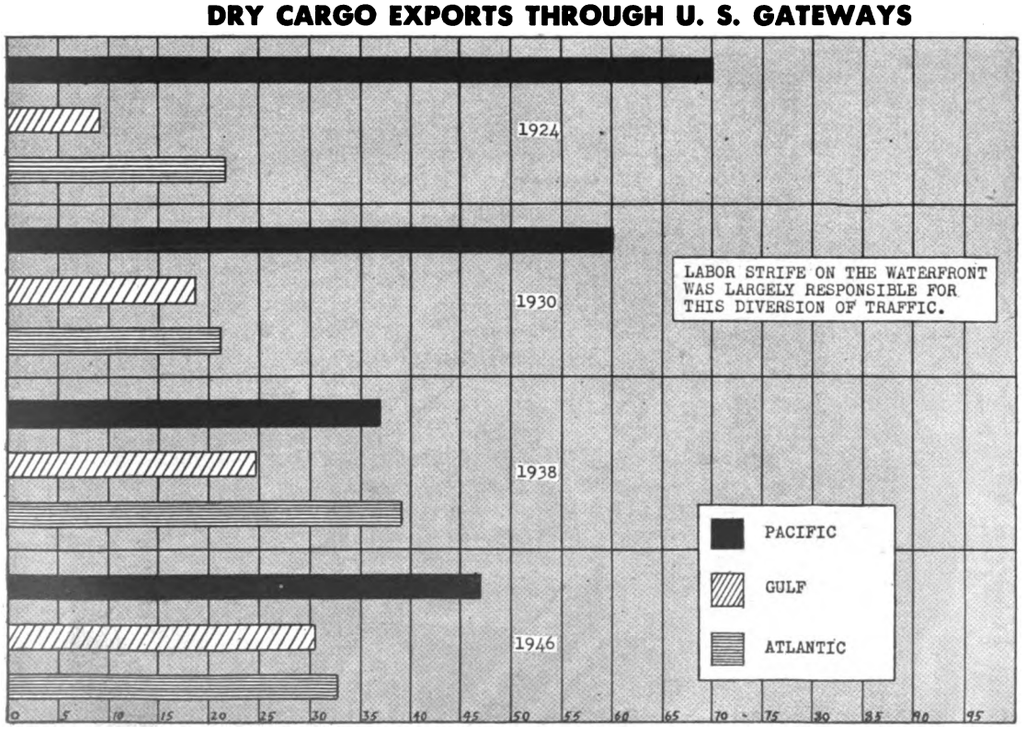
Congress Altered The Picture

While this charge was on file, and before the NLRB had taken action on it, the Taft-Hartley Act was passed. This completely altered the picture. Under the terms of the Act employers were not *required* to bargain with supervisory personnel. Nothing in the Act prevented employers from such bargaining if they so chose, but the Waterfront Employers did not choose to bargain with the ILWU for the walking bosses. After passage of the Act, the NLRB chairman wrote to the union: "It does not appear that further proceedings seem warranted inasmuch as the unit includes supervisory employees. Accordingly I am declining to take any further action on this matter."

The employers had every reason to refuse to bargain with the ILWU for the walking bosses. Past experience is a measure which they would not be likely to ignore, and that experience has been such as to prompt them to go to any lengths before they would let the ILWU gain control of their supervisory personnel.

Almost to a man the walking bosses are up from the ranks of the longshoremen, and as longshoremen they were members of the ILWU. When they are promoted to foremen, they maintain their membership in the rank and file union. The ILWU grants no withdrawal card and if the walking boss loses his job he is forced to go back to "packing a hook" and necessarily has to be a union member again. His only alternative is to resign from the union, and this he is reluctant to do. It was through this situation that the ILWU originally gained the recognition from the NLRB, since walking bosses all held cards in the union as *longshoremen.*

PERCENTAGE DISTRIBUTION OF TRANS-PACIFIC DRY CARGO EXPORTS THROUGH U. S. GATEWAYS



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A Rule on the Books

The situation is paradoxical. In the Port of San Francisco, there are approximately 180 walking bosses, and several thousand longshoremen. And yet the walking bosses are members of the ILWU and can be outvoted with impunity even though they are supposed to "boss" these men. The union has very definite rules on what the bosses can and cannot do. That this is not "shipowner propaganda" is concretely evidenced in two items appearing in the *Dispatcher*, official publication of the ILWU. In the issue of March 23, 1945, the ILWU stated: " . . . the union must and will find a way of cracking down on violators of union working rules, regardless of whether or not they are under our jurisdiction. In any case, offending bosses will be placed on our individual lists to be dealt with when the war is over, and they are back in the hiring hall and once more under the control of the union."

This quote was in the nature of a threat, intimidating the walking boss and telling him frankly that if he got tough he'd get a good working over if he lost his job and was forced to go back to "packing a hook." The second item appeared in the April 20, 1945, issue of the *Dispatcher*: " . . . Foremen are cautioned to remember that there is a rule on the books whereby a foreman can be fined $25 on the first offense and $50 on the second offense and expelled on the third offense." What constitutes an "offense" can be very loosely construed.

When the amount of control already exercised over the walking bosses by the rank and file union is seen, the reason is self evident why the employers were forced to take drastic steps to conteract the ILWU's move. The motives of the union are not purely economic, and there is little if any doubt that along with bargaining rights would have gone rotation of hiring, something which the walking bosses themselves describe as "impossible" and "hazardous" in their supervisory capacity.

Something Epic on the Labor Front

Employers and union turned the deadlock over to arbitration within the framework of the existing contract between them. The employers contended that the picket lines were collusive and that it was not the walking bosses who were on strike but the longshoremen in an attempt to gain recognition as bargaining agent. Dr. Clark Kerr, Impartial Chairman, handed down a decision in favor of the union, claiming that the picket lines were legal, and the strike continued.

On August 25, Luckenbach, unable to load or unload its ships, "abandoned immediately and permanently the stevedoring business" which it had conducted in San Francisco for twenty-three years. Despite the fact that the company was no longer employing walking bosses or longshoremen, the union continued to strike Luckenbach ships. After this the company suspended its West Coast shipning operations entirely.

Good to its word the union carried out the historically successful policy of "knocking 'em over one at a time." But something epic on the labor front mushroomed out of this — the employers refused to let the union play the game its own way! The employers got tough!

The ILWU planned with every confidence to pull the strike on Luckenbach and make it stick. By doing this, Luckenbach ships would be tied up while their competitors got all the business. Luckenbach could not, and the union knew it, withstand such economic pressure for very long and would capitulate to the ILWU demands. Then the union would move on to the next company and "knock it over" in a like manner, letting it lose the business back to Luckenbach. After winning recognition from a few major companies the others would be easy to take, the precedent having been established.

A New Era With Respect to Foremen

The employers turned the union's own weapons against it. They refused to be knocked over one by one. Instead, they worked out an arrangement whereby every steamship company belonging to the Waterfront Employers Association would reimburse Luckenbach for every cent it lost through suspending operations. Hence the union was faced with the proposition of either striking all of the companies or abandoning its attempt to win the bargaining rights for the walking bosses.

The ILWU spread the strike and on August 25 the affected companies secured an injunction to halt the picketing. The union filed an affidavit with the Los Angeles Superior Court testifying that the strike was "against all companies" and continued to picket. At this turn of events the employers, claiming it was impossible to operate the port under such circumstances, announced that at midnight September 30 the port would be closed down and the services of longshoremen and foremen would not be needed.

Frank P. Foise, President of the WEA, stated: "The officials of the ILWU can avert this tie-up by a telephone call. It is as easy as that. They need only call off the walking boss strike, which they have engineered and controlled from the start, and which they now admit is against all employers, and not just one or two.

"The law and recent developments under it are abundantly clear on which way we are going on management personnel. The new law removes all compulsion to bargain collectively, clearly lifting Foremen out of the realm of unions . . . . There is a new era with respect to Foremen. It is the law of the land. The courts and many unions are already performing under it."

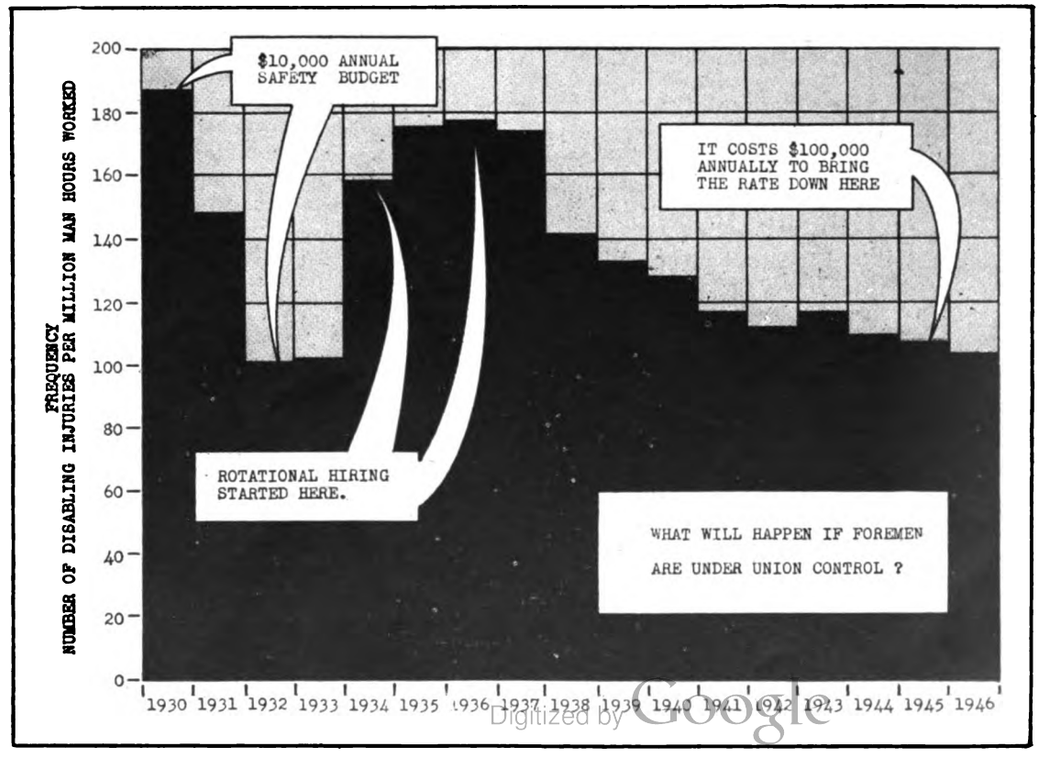
On October 7, Impartial Chairman Arthur C. Miller (Clark Kerr resigned his post and was replaced by Miller during the course of the dispute) ordered the employers to reopen the port. Miller charged that the employers had violated their contract with the union which provides for no stoppage of work. Miller also charged that the employers ". . . did not merely exercise their managerial rights and authority over the employment of these employees individually or in connection with a dispute with such employees, but, on the contrary, they exercised these rights and this authority for the purpose and with the effect of locking-out the longshoremen in order to put economic pressure on the International Longshoremen's and Warehousemen's Union and its members in connection with the dispute between that union and the employers over the representation of foremen and walking bosses."

After a Brief Skirmish Back to Work

In the same award Miller observed that "the actions of the Union and its

(Continued on Page 50)

ACCIDENT RATE FOR PACIFIC COAST LONGSHOREMEN



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By The LOG'S Own Correspondents

Frank Taylor, Re-Elected Institute President

Frank J. Taylor, Institute president since 1938, was re-elected at the Institute's Annual Meeting held February 5, 1948. John W. Bancker, R. J. Baker and John J. Burns were re-elected Vice President, Secretary - Treasurer and General Counsel, respectively.

Re-elected to the Institute's Board of Directors were R. R. Adams, President, Grace Line Inc.; John M. Franklin, President, United States Lines; M. G. Gamble, General Manager, Marine Department, Standard Oil Company of New Jersey; John F. Gehan, Vice President, American Export Lines, Inc.; Ralph C. Goodwin, Vice President, Mystic Steamship Division, Boston; J. J. Halloran, Vice President and General Manager, Sprague Steamship Company, Boston; W. F. Jones, General Manager, Gulf Oil Corporation; Charles Kurz, President, Paco Tankers, Inc., Philadelphia; Joseph T. Lykes, President, Lykes Bros. Steamship Co., Inc., New Orleans; A. V. Moore, President, Moore-McCormack Lines, Inc.; Lewis D. Parmelee, President, New York and Cuba Mail Steamship Company; H. Harris Robson, Vice President, United Fruit Company; and H. W. Warley, President, Ore and Calmar Steamship Corporations. Walter M. Wells, President, Isthmian Steamship Company, was elected a Director, replacing John McAuliffe, former Isthmian President.

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Forbid Sale or Charter of Ships to Foreign Nations

Acting on a measure introduced by Senator Tobey, the Senate passed a resolution prohibiting the Maritime Commission from selling or chartering ships to foreign nations after March 31, 1948, thus spiking the controversial shipping section of the Marshall Plan.

It is understood from several Washington sources that the State Department, in view of the almost universal opposition to the transfer of 500 ships under the ERP, is about to withdraw its recommendations contained in the Paris Report. However, the Tobey resolution, which also extended the authority of the Commission to charter and sell ships to U.S. citizens until July 1, 1949, will nullify any State Department plans in the direction of transferring ships if passed by the House, to which it has now been referred.

Prior to being reported to the floor of the Senate, the bill (S.J. Res. 173) was delayed by amendments introduced by Senator Sparkman at the request of Waterman Steamship Corp. However, the Senator withdrew the amendments when informed that it would delay passage of the resolution which must be approved before February 29, 1948, if the Commission is to continue its chartering program.

The amendments introduced by Waterman, and which may be taken up in the House, were as follows:

(1) To extend the chartering of coastwise and intercoastal ships until September 30, 1948, but to definitely cut it off at that date.

(2) To extend chartering of ships for foreign trades until June 1, 1949, but limited to that date.

(3) To prevent Government vessels from being chartered to U.S. citizens (and this is a point of disagreement between Waterman and the major portion of the industry which precipitated Waterman's withdrawal from the NFAS) unless they actually own American tonnage as of February 29, 1948 or who have made unqualified committments to purchase tonnage for American-flag operations as of that date.

(4) Limit the number of vessels a citizen can charter for foreign trade operation to a ratio of two chartered ships for each vessel owned or committed to purchase.

The Tobey resolution also provided for extension of Coast Guard authority to grant waivers.

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Industry Mobilizes In Fight Against Overtime Claims

Affected industries in the U.S. are getting behind the National Federation of American Shipping and the Pacific American Steamship Association in the all out fight against the overtime-on-overtime claims of a group of New York longshoremen.

On the West Coast the steamship, stevedoring, and other industries directly affected, have representatives working on state legislators to apprise them of the threat this wage-claim holds for many industries as well as Government. The overtime-on-overtime claims, now in the process of the courts, will cost industry billions of dollars and is equally as threatening as the portal-to-portal pay suits which gained so much attention last year.

Legislative representatives of the NFAS in Washington have been pressing legislation on Capitol Hill aimed at removing the case from the courts through Congressional action.

Samuel D. Schell, vice president of the NFAS, and Bruce MacNamee, legislative representative, are at present touring the Southeast in an effort to arouse the industry to the dangers of the present claims.

FCC To Waive License Requirements for Radar Operation Aboard Ships

It has been learned from sources close to the FCC in Washington that the staff of that Commission will recommend a waiver of radar operator's license requirements of the law, provided:

(1) The equipment is of an approved type.

(2) It is operated by the Master or others authorized by him.

(3) Adjustments or tests during or coincident to the installation, servicing or maintenance be conducted by or in the presence of a first or second class radio operator.

The problem of the FCC in this matter is proving to be somewhat of a dilemma since they feel that the industry will request hearings on the matter if they don't waive the provisions of the law, and that labor will request the hearings if they do. In addition, they are aware of the precedent they will set affecting the operation of other new services and equipments when the time comes to place them on a regular service basis. Labor, of course, would like to have a special radar operator aboard each ship and the industry is opposed to an additional man.

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Congress Passes Army-Navy Procurement Bill

The Senate passed on January 26, 1948 the bill introduced a year ago on January 27, 1947 by Representative Andrews (H.R. 1366) providing for the procurement of supplies and services by the War and Navy Departments.

This is the bill that in its original form would have jeopardized American shipping through a requirement forcing the Army and Navy to advertise for services, which would be construed to include shipping. The LOG caught this discrepancy in the bill and reported it in this column (see The LOG for May, June and July 1947). As a result of this attention an amendment was introduced and incorporated in the legislation providing that "purchases and contracts for supplies or services for which it is impractical to secure competition" may be negotiated by the agency head without advertising. Both the Army and the Navy are sure that shipping services will be excluded from advertising of bids under this language.

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NFAS Opposes Sacramento Project

Frazer A. Bailey, president of the National Federation of American Shipping, opposed the Sacramento deep-water channel before the Subcommittee on War Department of the House Appropriations Committee.

Mr. Bailey, in stating the shipping industry's views, said: "We are in favor of anything that would be beneficial to the State of California but frankness re-

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quires us to say that we do not think the Sacramento deep-water channel will be used if it is constructed.

"We are, therefore, appearing in opposition to the project. Our opposition is based upon three primary fundamental principles:

"(a) We do not believe it will accomplish the objectives for which it is being advocated.

"(b) We believe it is economically unsound, i.e., that the advantages or savings to shippers of consignees are disproportionate to the cost of its construction and maintenance.

"(c) That the data and studies upon which it is being presently considered, to the best of our knowledge and belief are stale, i.e., out-of-date and not representative of present day costs and conditions."

Mr. Bailey suggested that the Army Engineers be requested to hold further hearing on the project to bring it up to date.

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Introduction of Bill To Amend Immigration Laws

A bill to amend the immigration laws relating to stowaways has been introduced by Representative Fellows, Chairman of the House Subcommittee on Immigration and Naturalization.

The bill, H.R. 5119, provides that the owner, charterer or master of any vessel arriving in the United States who fails to detain on board an alien stowaway or who fails to deport such stowaway when required to do so, shall be fined $1000 for each such stowaway. However, under the bill this penalty may be mitigated by the Attorney General upon satisfactory proof that the presence of the stowaway aboard the vessel could not have been ascertained by the exercise of "reasonable diligence."

The bill further provides that any alien attempting to enter the U.S. as a stowaway be denied the right to lawfully enter the U.S. for a period of 10 years; and subjects such stowaway to a fine of not less than $100 nor exceeding $500, or imprisonment for a term of not less than three months nor exceeding one year, or both.

This bill, which supersedes H.R. 3593, has been referred to the House Judiciary Committee.

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Congressional Committees Holding Up MC Appropriations

House Report No. 1288, dealing with appropriations for the Executive Office and sundry independent executive boards, bureaus, commissions and offices, was reported out of Committee January 30, but did not include the appropriations for the Maritime Commission. The bill included the following statement concerning MC appropriations:

"In prior years, appropriations have been provided in this bill for the Atomic Energy Commission, the U.S. Maritime Commission, the Veterans Administration, and the War Assets Administration. The Committee is of the opinion that much can be accomplished in connection with the consideration of these important activities if more time is available for further investigation and study. It has determined, therefore, to defer the holding of formal hearings until later in the year when the result of such studies and investigations are available."

The Committee is probably honing a special axe for the Maritime Commission appropriations.

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Bradley Blasts State Dept. While Saugstad Advocates Ship Transfers

Congressman Willis W. Bradley (R), California lashed out at the State Department's proposal to transfer American ships to the sixteen nations participating in the Marshall Plan in three twenty-minute addresses on the floor of the House. At the same time Jesse E. Saugstad, chief of the State Department's Shipping Division, was trying to convince the shipping industry that these ships *should* be transferred in an address before the Propeller Club, Port of New York, in the plush Wedgwood Room of the Waldorf-Astoria.

Letting fly hot and true from all tubes, Mr. Bradley, a retired Navy Captain with some first-hand experience, told the House: " . . . during the recent war, many a torpedo was fired at an American merchant ship, and when it struck its mark quite a few jobs for American seamen went up in smoke and flame. However, never before has a torpedo been fired with such dire consequences as the one launched by the State Department's European Recovery Program. A German or a Japanese torpedo might sink one ship and deprive a few men of their jobs—the State Department's *Model ERP-1948* will do just five hundred times better than the best German or Japanese weapon and, most amazing to relate, the *Model ERP-1948* torpedo was not designed or fabricated by technicians who know Naval ordnance, seamanship, or shipping, but rather, at the technical level by two Rhodes Scholars, three professors, an investment banker and a career bureaucrat. Nevertheless, I must confess, that it is an amazingly efficient weapon of destruction for the American Merchant Marine."

At the same moment Jesse Saugstad propounded the theories of the State Department in regard to the transfer of the five hundred controversial ships by saying: " . . . we will have to accept foreign (ship) services or our exports will fall off fifty to seventy-five percent." In general, Mr. Saugstad rehashed the proposals contained in Chapter J, Maritime Transport section of the Commodity Report on the European Recovery Program.

In an earlier address to the House of Representatives, Congressman Bradley eulogized the death of the Merchant Marine in these words: " . . . the funeral of an adequate American Merchant Marine has been arranged by the State Department. The pallbearers may well be some sixteen foreigners. The mourners will all be Americans. The Outline of a European Recovery Program prepared under the direction of the State Department, aims a near mortal blow at our present merchant marine. It may be that this Congress can save the patient's life and disappoint those who hopefully anticipate the reading of the last will and testament."

On February 9, Congressman Bradley made a third address supporting the Tobey resolution passed by the Senate forbidding the Maritime Commission to sell, charter, or transfer ships to non-citizens after March 1, 1948.

JESSE SAUGSTAD . . . "we will have to accept foreign services."

WILLIS BRADLEY . . . "Torpedo Model ERP-1948."

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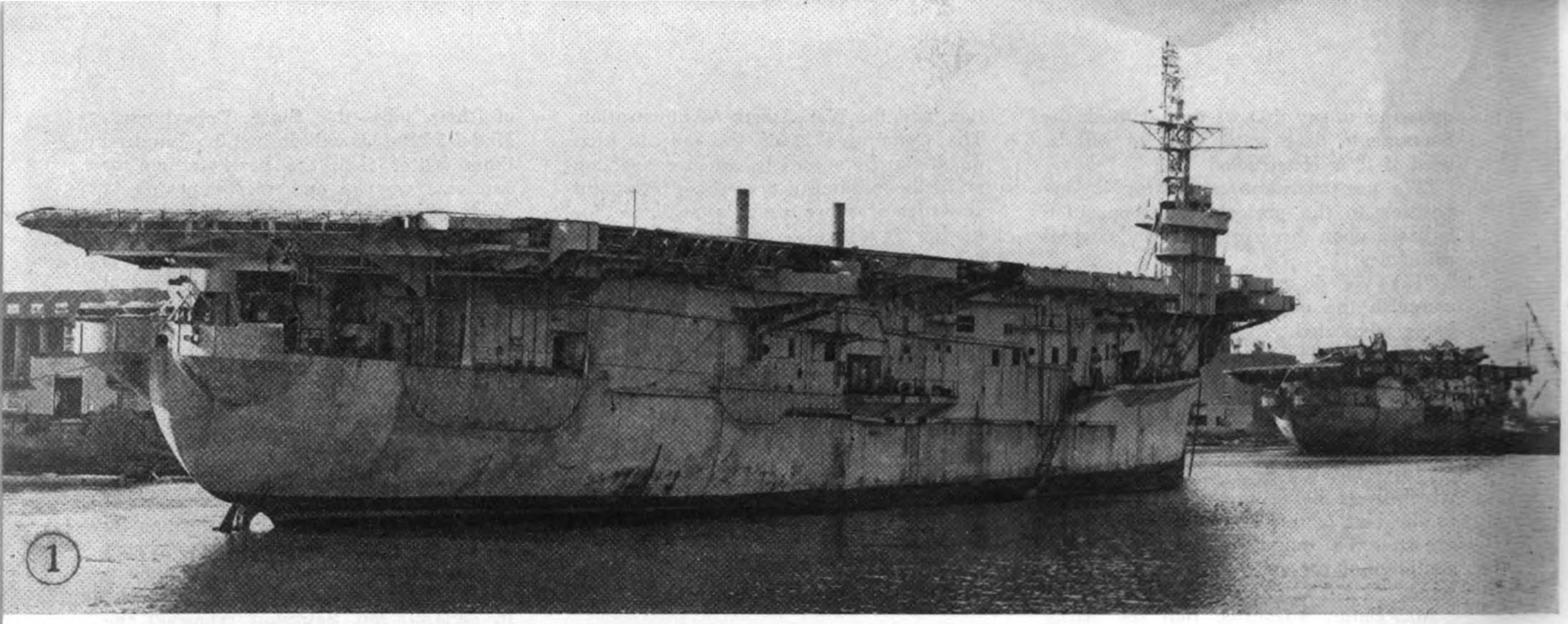
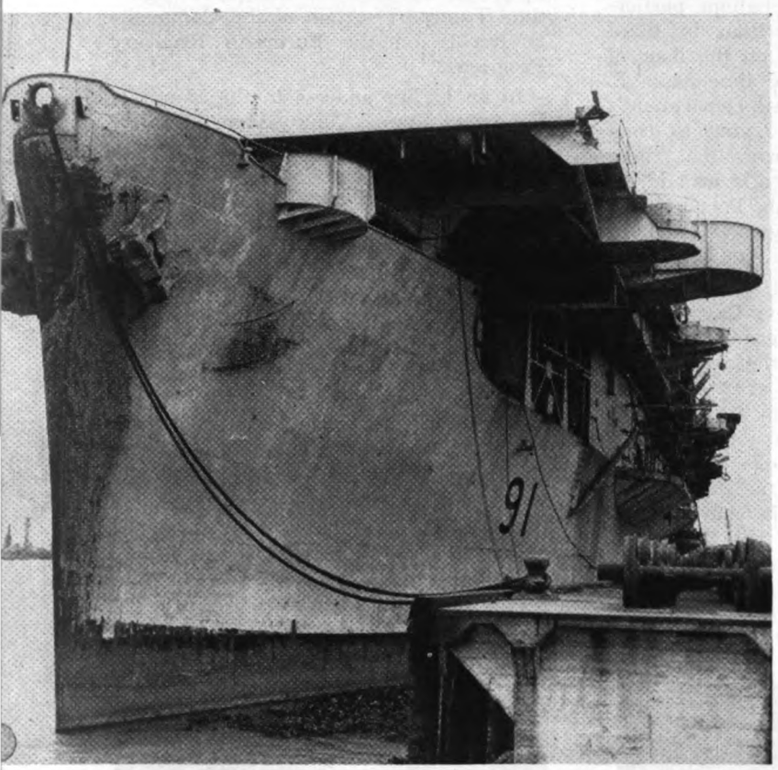


1. S.S. STALKER before the start of conversion by the Gulf Shipbuilding Corporation. This airplane carrier as obtained from the U. S. Navy by Waterman is a completely equipped flattop with the exception of armament and planes. This type of carrier carried between thirty and forty planes during the war and saw service primarily in the Middle Atlantic and Mediterranean area.



2. Bow photo of one of the aircraft carriers delivered to the Gulf Shipbuilding Corporation by Waterman for conversion.

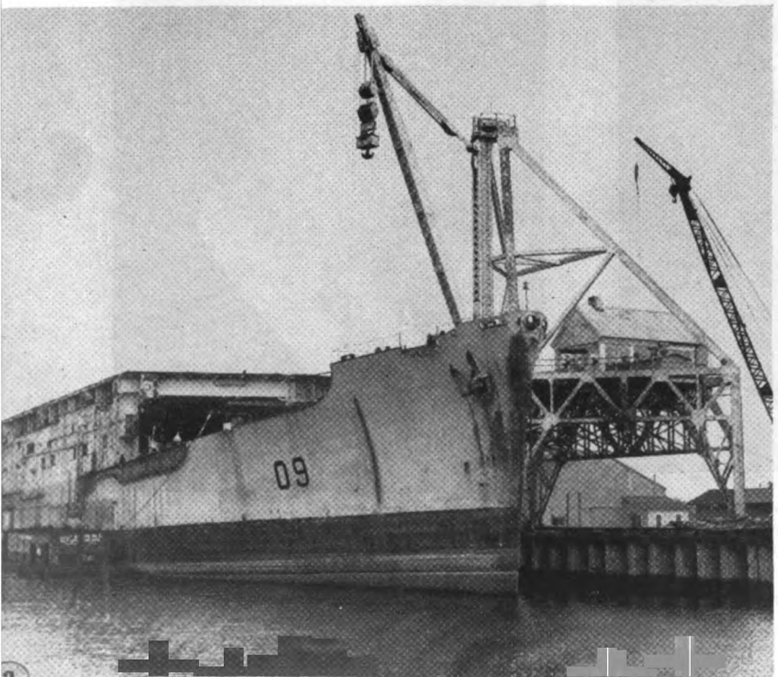
CARRIER TO

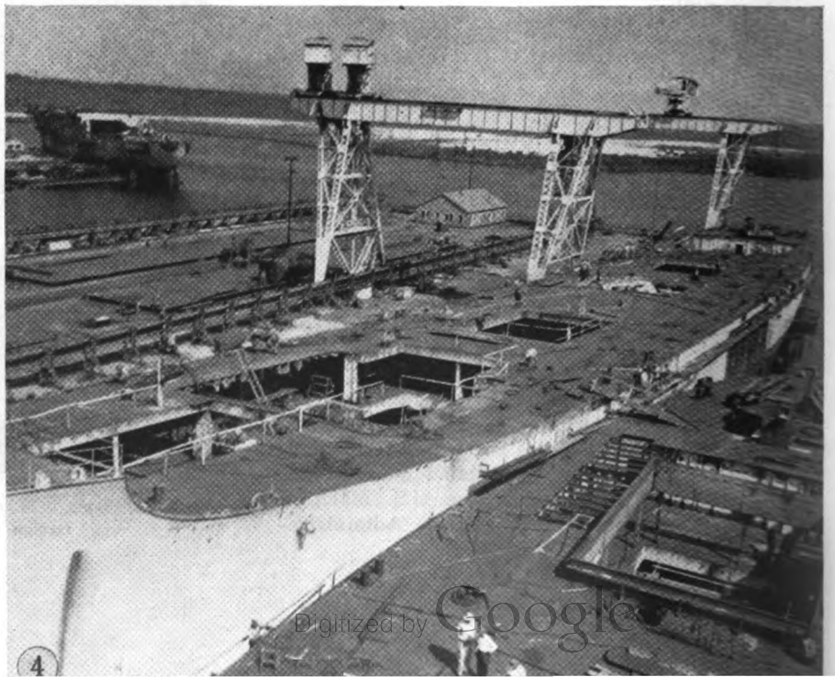
On January 15th, another World War II aircraft carrier was converted to a speedy, 17½-knot, C-3 type merchant dry cargo vessel by the Gulf Shipbuilding Corporation and delivered for the account of the Waterman Steamship Corporation of Mobile, Alabama. This was the third of eleven aircraft carrier conversions completed at the Gulf Shipbuilding Yard in Mobile, with deliveries for the balance of the vessels scheduled at one per month.

Faced with the necessity of converting the eleven carriers to merchant cargo vessels in the shortest possible time, executives at Gulf developed an "assembly line" conversion procedure at their Yard,

3. (Left) First step in the conversion method is the removal of the control tower and then flight deck by sections. This carrier already has the forward portion of the flight deck removed and the hull lines start to take shape.

4. (Below) The carriers SS STALKER and SS CHASER have been stripped down and cargo holds and hatches are being installed. To the left rear is a sister carrier with the rear portion of the flight deck removed.





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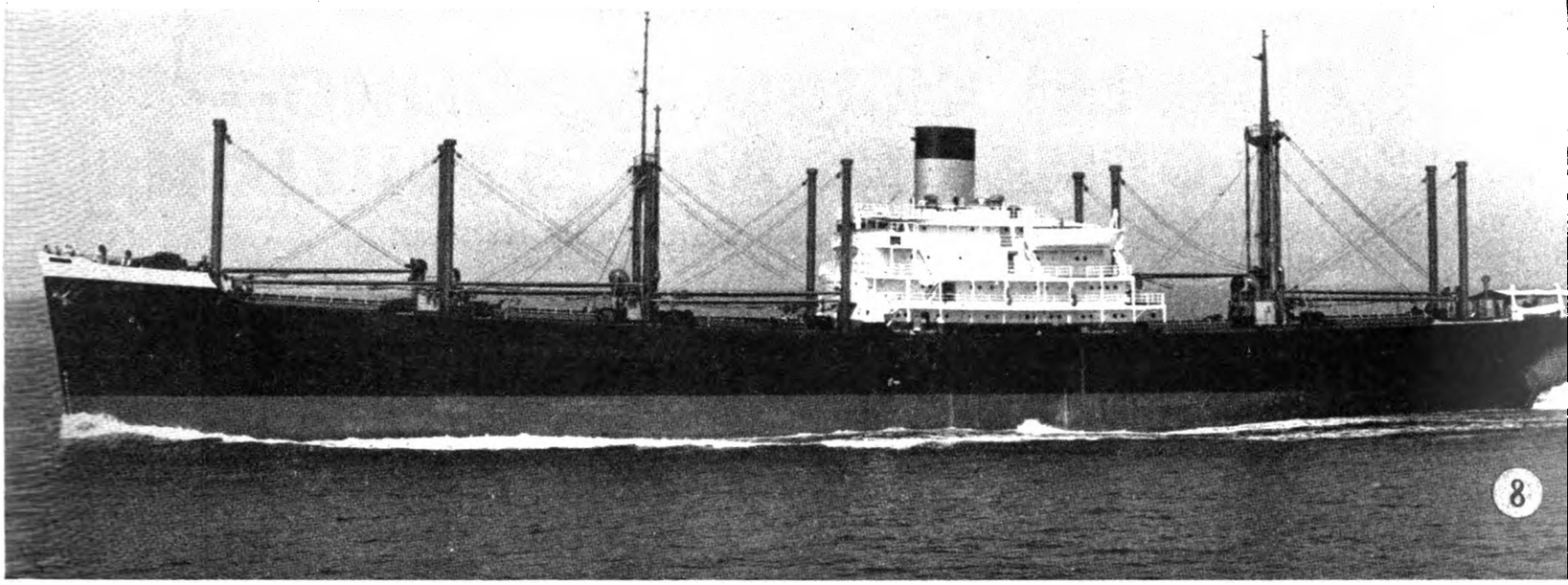
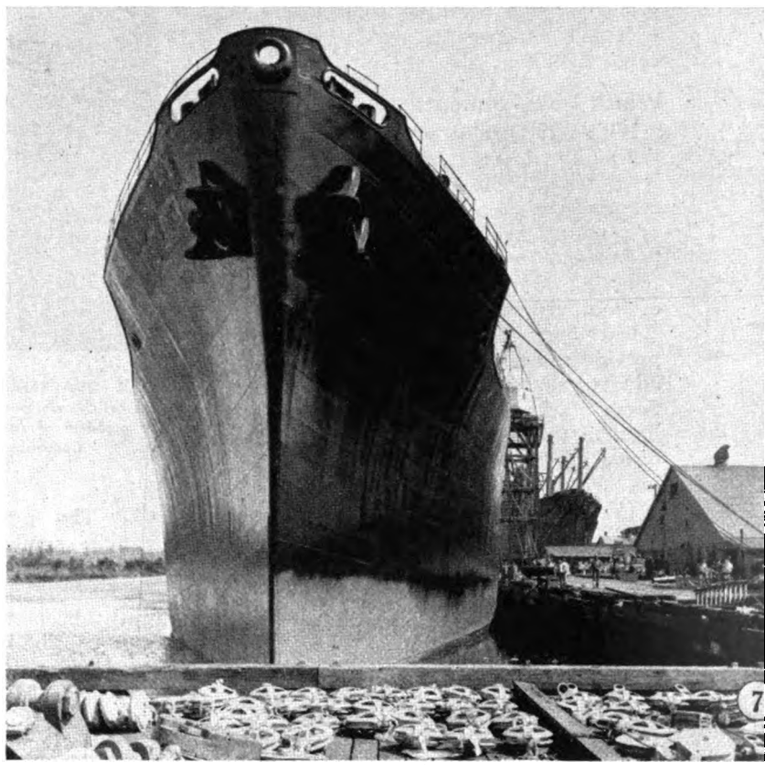


8. First of eleven former U. S. Navy Aircraft Carriers completely converted to a C-3 type dry cargo vessel on its trial run in the Gulf of Mexico. The completed new C-3 dry cargo vessels as delivered to Waterman Steamship Corporation are four hundred ninety-two feet over-all length; sixty-nine and one-half feet beam. They are single screw ships driven by 8,500 HP Allis-Chalmers steam turbines. The new vessels have accommodations for twelve passengers.

CARGO SHIP

which authorities estimate has cut the conversion time to less than one half the period normally taken for the huge project.

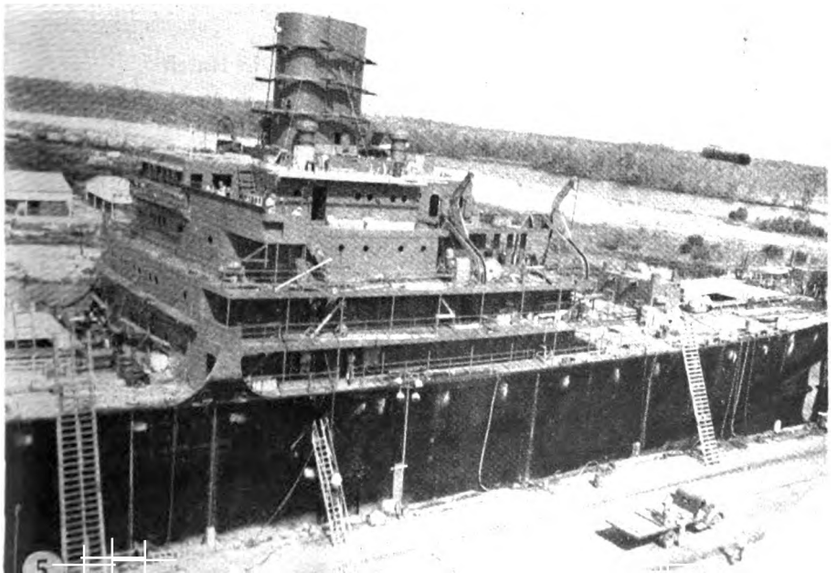
The aircraft carriers, when purchased by Waterman from the U. S. Navy and delivered at Mobile, were fully equipped as carriers, including flight decks and all war-time fighting facilities excepting armament. The Gulf Shipbuilding engineers were faced with establishing procedures whereby the flight decks were removed and the vessels stripped to the hulls in a continuous operation. Thereafter, the ships are completely rebuilt, also in a continuous "assembly line" operation.

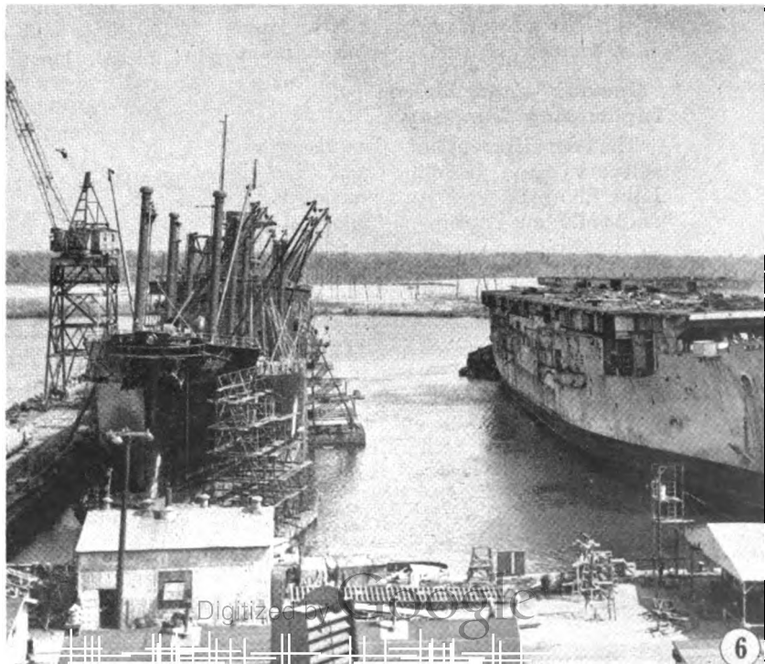


7. Bow photo of the same carrier after conversion to a C-3 vessel by Gulf Shipbuilding Corporation.

5. (Below) The SS CHASER with the C-3 type superstructure almost completed, but without king posts and booms.

6. (Right) A "before and after" view at the Gulf Shipbuilding Corporation Yard. At the left is a former flattop almost completely converted to a C-3 type dry cargo vessel and on the right is a sister ship which is only partially stripped and still has the flight deck intact.





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GENERAL CARGO HANDLING--DEVELOPMENTS AND SOLUTIONS

AN ANALYSIS OF GENERAL CARGO HANDLING PROBLEMS

Part I

By L. H. QUACKENBUSH
Operating Department
*States Marine Corp.**

LESLIE QUACKENBUSH gathered the material for this article while working as a field researcher in the problem of cargo handling for Bethlehem Steel Company, Shipbuilding Division.

It is well known that the greatest expense in the operation of a vessel is the cost of handling cargo. In some cases, the expenses of readying, loading and discharging will consume 50% of the total freight earned on a cargo. This expense is, of course, therefore very carefully considered by vessel operators before fixing a vessel on a piece of business. We have, as you well know, in the steamship industry, men who have spent many years considering the cost of this phase of operations closely because of narrow profit margins resulting from just such excessive expenses as are occasioned in cargo handling.

Winch Developments

With reference to winch developments the author, in view of the many recently published discussions and technical reports concerning them, feels able only to comment briefly upon what these developments may mean insofar as contributing to a solution of the problem of improved cargo handling.

Developments in winch design should provide some, if not all of the following advantages to efficient cargo handling. Some of these advantages have already been provided in vessels and winches of foreign design such as the M.S. Stavelot.

(1) Additional speed points
(2) Slower stabilized speed of acceleration permitting hoisting with less violent sporadic motion of the draft.
(3) Occupy less deck space than present winches.

It is well known that most operators prefer electric winches. However, some quarters of the maritime industry have, on the basis of long experience been encouraging extensive study on and directed towards an improved steam winch. Its advantages make it undoubtedly worthy of further consideration.

"Siporter"—Lake Shore Engineering Company

The development of the "Siporter," sideport cargo handling gear, by the Lake Shore Engineering Company is undoubtedly an extremely important step in the direction of efficient cargo handling in sideports. It consists of a retractable boom installed in the overhead of the tween deck ejecting through the sideport opening. The arrangements noted by the author were in model and blueprint stage but it was obvious that one piece of equipment could be arranged to handle both sides of the vessel. The principle of the "Siporter" is quite similar to the various retractable overhead handling cranes for working weather deck hatches that have recently been the object of much discussion. The hoist of the "Siporter" consisted of a single whip. This piece of equipment is for all practical purposes the first shipboard arrangement devised for handling general cargo through sideports. To date cargo through sideports has, where the nature of the cargo, tide and draft conditions, terminal facilities and available equipment permitted, been handled by fork trucks, and tow trucks and tractors. In the absence of being able to use the aforementioned methods of handling cargo, we have been using the old fashioned "pick and carry."

The "Siporter," however, it must be conceded, is a piece of equipment of maximum use only to vessels engaged in services where full use of sideport loading can be made by reason of the carriage of cargoes readily adaptable to the limitations of the sideport opening and to rapid efficient stowage.

The author has not seen performance figures of the "Siporter" as recently installed on one or two new vessels. However, as a result of the obvious effect of the unavoidable limitations that a small opening such as a sideport must place on the drafts of cargo being worked through it, the author believes it will be found that the blind hatches it serves will prove to be the "bottleneck" in quick turn around.

Some members of the industry have estimated about 8 to 11 tons per hour through a sideport with this gear in loading. This is a speed performance quite similar to the old pick and carry method.

Containers, Pallets, Unit Loads

This particular source to economies in the handling of cargo is extremely specialized. It is applicable to certain trades and types of cargo only. These restrictions remove unit packaging from the classification of general cargo. However, the potential economies of container and pallet handling of cargo are such as to warrant mention and consideration of this type of shipment and handling here and in any discussion on general cargo handling in tramp or specialized trading.

Unit packaging in industry has become a very definite factor in materials handling. Engineers have been making extensive studies and widespread application of the principle. It is definitely in accordance with the axiom "that economical movement of goods is secured only by not handling them."

Although most operators and shippers are now using unit packaging in one form or another it is not believed that the principle has been adapted to its fullest advantage. Study and further application of the principle to the carriage of goods by sea is being made but is progressing very slowly.

The progress made by some in the adoption of the principles of unit packaging have been extremely small but in the case of certain coastwise operators who have found that it is necessary in order to insure the continued operation of their vessels at a profit, unit packaging study and application is rapidly being made.

Hatch Openings—The Twin Hatch

The Twin Hatch, known not as a new idea, has recently been brought forth as a source of improved cargo handling. It has been especially considered with reference to overhead handling gear such as the "Harrison Gear." A fore and aft arrangement, that is the longest dimension of each lies in the fore and aft line of the Twin Hatch, was used in discussion and has since been more closely studied by the Maritime Commission for the C3-DB3 Cargo Vessels. A sketch of the Maritime Commission "Twin Hatch" plan for the C3-DB3 is shown herewith.

**Presented as a technical paper before the Metropolitan Section of the Society of Naval Architects and Marine Engineers.*

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Prior to entering into a discussion of the possibilities of the Twin Hatch idea which the Commission may not, but undoubtedly has, considered, it is desired to point out some of the possible advantages of the Twin Hatch idea regardless of the particular arrangement adopted.

Twin Hatches, regardless of particular arrangement, can provide the following advantages:

(a) Reduced drag or movement of cargo to the wings or ends of holds.

(b) Increase of deck opening above holds providing the possibility of taking the fullest advantage of "spotting" cargo either with conventional or improved cargo gear.

Some sources will argue that Twin Hatches have disadvantages consisting of the exposure of greater area subject to stoving by heavy seas and to losses from water damage to cargo while working as a result of the greater opening to the weather. The first objection to Twin Hatches it is believed is readily compensated by the design and structural arrangement of the hatch covers adopted. The second it is felt is a superfluous objection which is readily compensated by the use of hatch tents and by alert anticipation of change in weather and the covering of hatches. Of course it needs be remembered that, with an increase of hatch opening area and with the provision of two hatches where normally we had one, detentions resulting from opening and closing hatches are going to increase unless mechanical hatch covers or the like are provided.

Hatch Covers

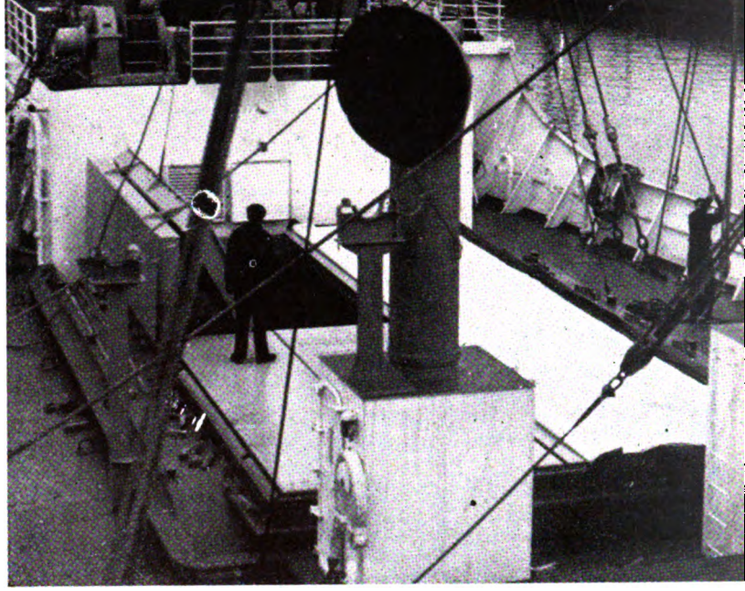
Hatch covers are, as a matter of general knowledge, the source of extensive and costly non-productive work. Detentions opening and closing hatches for the day's work amount to approximately a total of one hour in fair weather. This amounts to a 12½% reduction in the amount of cargo that might be handled in an eight hour day. For example with a full productive 8 hour day, 200 tons might be handled in any one hatch, but with 1 hour lost opening and closing only 175 tons is actually handled.

Pontoon hatches have proven to be a great improvement in the opening and closing of hatches as compared with the older type beam and board cover. However, pontoon covers do have serious drawbacks. They take up a major portion of the deck space making efficient movement on deck difficult and they also still necessitate resetting of the boom elevation as each successive pontoon is handled.

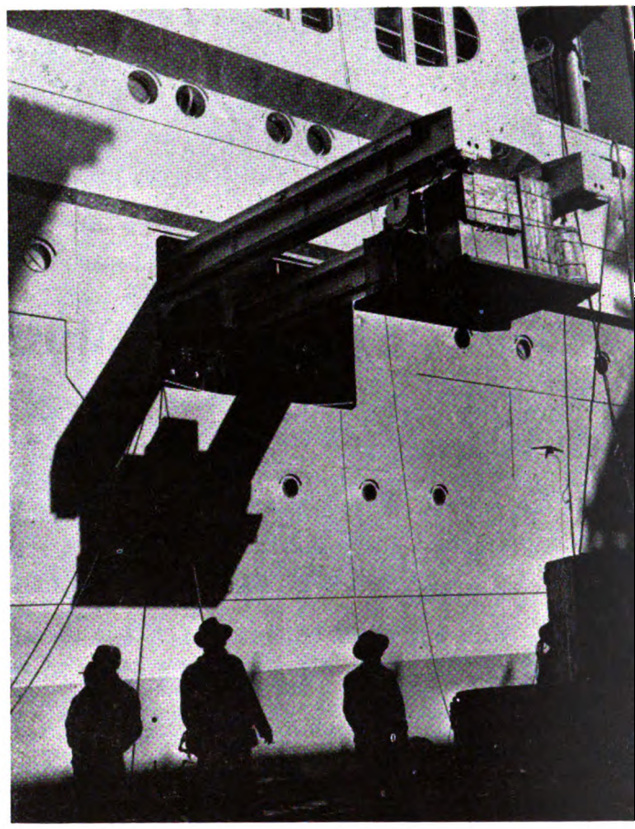
Recent proposals for improvement of hatch covers have followed the principle of the mechanical hatch. There are several types of which it is intended to discuss here only two.

Before considering proposed mechanical hatches, it is desired to point out that generally these have included the characteristics of water-tightness. There is

(Continued on Page 66)

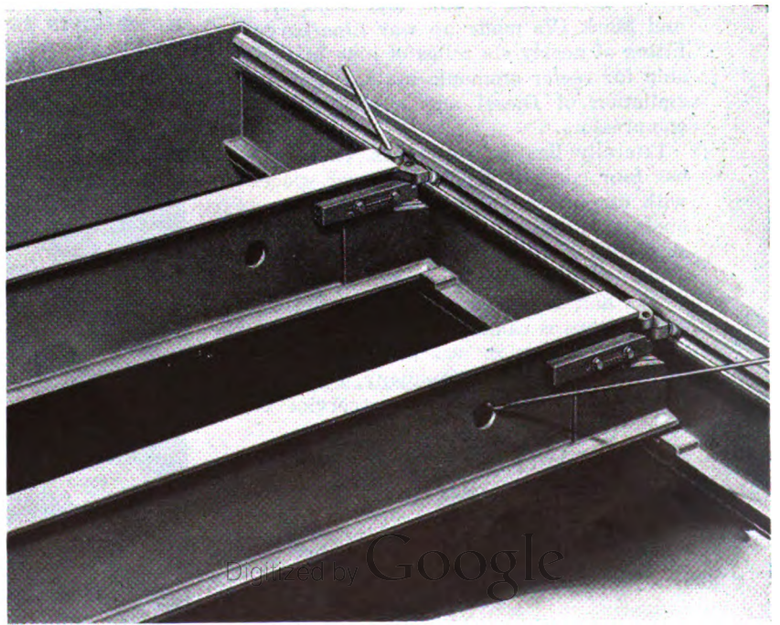


QUICK OPENING HATCH of the Mege type built by Seaboard Machinery Corp. Hatch has one center beam (athwartship) with folding cover in four sections as pictured. Type shown is non-watertight and must be covered with tarpaulin, although Seaboard has acquired rights for manufacturing watertight variety. The installation shown is aboard the French Supply Council ships being constructed at the Tampa Shipbuilding Yard, Tampa, Florida.



"SIPORTER" INSTALLATION ABOARD SS PRESIDENT CLEVELAND. An innovation in the design of cargo handling machinery is this sideport loading and discharging crane, which is installed at No. 4 hatch and permits cargo to be loaded through side openings with ship's own gear. The "Siporter" aboard the CLEVELAND consists of two retractable parallel booms, each carrying one trolley, which are installed for athwartship travel in unison. The two booms together are capable of handling 3 tons. They are operated by a 10 h.p. motor, the travel of the trolleys by a 15 h.p. motor.

Later refinements of this gear (see "Cargo Devices Shown At Lakeshore Demonstration in this issue of The LOG) have been made by Lake Shore Engineering Company, of Iron Mountain, Mich., manufacturers of the equipment. New model is Gantry type with rails on deck instead of overhead, reducing machinery space and permitting the loading of 25 to 30 tons per hour.



SEABOARD ROLLER BEAM HATCH . . . by rotating the lever pictured on the upper beam (which is in secured position) the weight is transferred to the rollers and tracks. The lower beam (in rolling position) is then pulled to the end of the hatch by a manually controlled hook.

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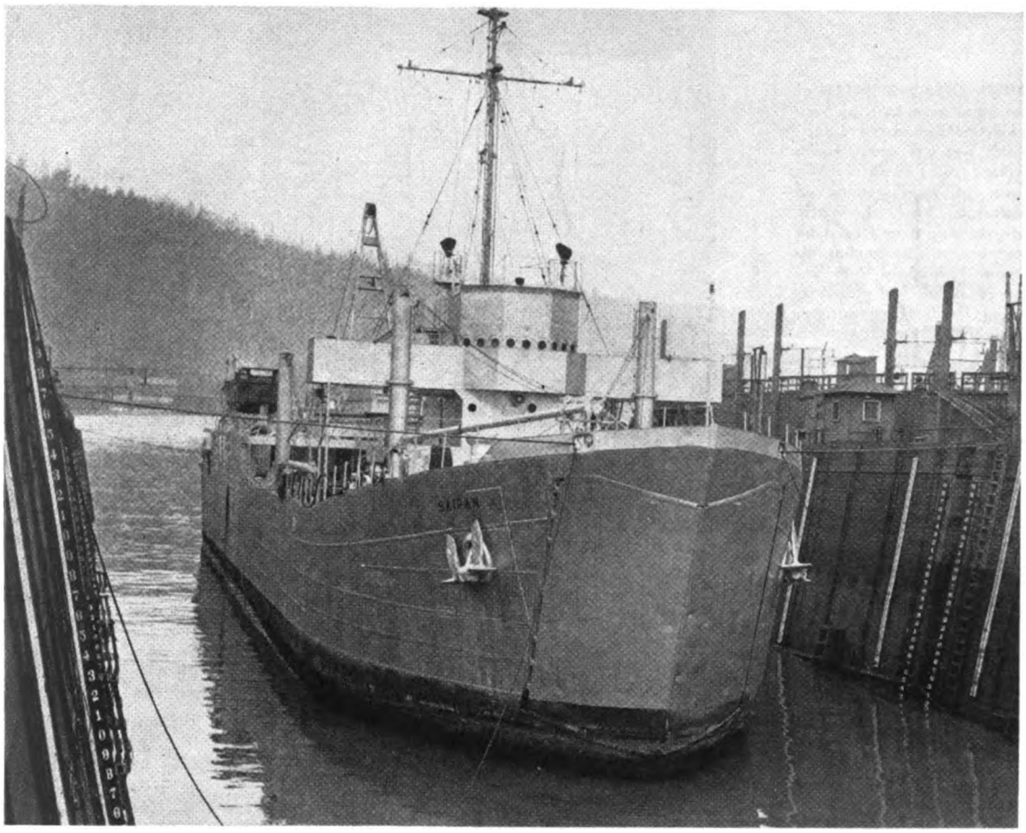

FISH FREEZING VESSEL . . . The mv SAIPAN converted from an LST type vessel. Originally converted to salvage ship, the bridge on the SAIPAN is forward of the usual position on LSTs. Compressor room on the ship is approximately midship in the space formerly used for salvage equipment.
A Lawrence Barber, Portland photo.

RECONVERTING LST INTO

SEA-GOING CARRIER

Converted from naval use to profitable commerciai use as a fish freezing vessel serving as a mother ship to fishing boats at sea

With but minor changes to hull and engine room two LST type vessels have been converted from naval to commercial use. In service the ships will operate as sea-going carriers serving as mother ships to fishing boats at sea and to pick up, quick freeze, stow, and transport catch of the smaller vessels to shore plants.

Additions include new crew quarters, insulation of spaces on the tank deck where Shermans, Grants, and Mark IIIs, and Mark IVs made up war time cargo, fitting of nearly six miles of pipe in each ship for reefer ammonia system, and installation of Diesel and electric driven compressors.

Literally floating ice boxes, each ship has four compartmentized freezer spaces with one space adapted to quick freeze operations and for cargo storage as the ship fills. Total net storage space thus provided is 250 feet in length, 27 feet in width, and 10 feet in height. A capacity of 1000 tons is calculated for each ship.

The reconversion was done by Willamette Iron and Steel Company, Portland, Oregon, for operation in the service of Columbia River Packers Association.

Close Working Cooperation

Work was carried out under the supervision of W. C. Nickum and Sons, Seattle, as design agents, with Robert L. Dryer of that firm in charge as direct representative of both the owners and design agent. The arrangement brought about a coordination between the design office, owners and shipyard management and workers to result in day to day problems being solved on the job and all work progressing without delays. Involved were such intricacies as piping layouts, placement of motors and equipment, and corrections in gearing arrangements, where absence of close liaison meant the loss of many man hours.

Cargo operations of the two ships begin with use of new cargo gear to transfer baskets loaded with up to 1400 pounds of fish from fish boats direct to the quick freeze brine wells located below the deck level in the second space from the forward end.

Brine Tanks

Utilizing 1.7 pounds of salt to one gallon of water the brine solution requires 60 tons of salt for one charge of the tanks. Calculations include consideration that water temperatures in southern waters sometimes run as high as 85 degrees. Temperature in the tanks is figured to drop to 5 degrees below 0 Fahrenheit.

To withstand effects of the dense brine solution, and low temperatures, exposed face of the brine tanks have been sandblasted to bright steel and then surfaced with six coats of No. 23 system Amercoat. Cataloged as a plastic paint, Amercoat was specified because of results attained in actual use on brine tanks of tuna clippers operating out of San Diego.

Brine race coils are placed in closely matted mass array in the side walls. Brine is kept in motion by four agitators. Each agitator is driven by a 14 hp. motor located in adjacent wing walls.

Wire Mesh Baskets

Each ship is equipped with 180 wire mesh baskets. Fabricated by Albina Engine and Machine Works, Portland, and of special design, they are of reinforced angle and flat bar steel galvanized after fabrication. They weigh 270 pounds net but due to buoyancy of the fish in dense brine a pull of but approximately 20 pounds is required to lift the basket to the surface.

From the brine tanks the baskets are picked up by a bridge crane and transferred to carts moving on rails permanently fastened to the deck for delivery to fore and aft storage spaces.

THEY SUPERVISED THE RECONVERSION WORK . . . Willamette Iron and Steel Company supervisory staff active in yard conversion and repair work. Left to right, standing: CLYDE TEELING, Machinery Superintendent; GEORGE AITKEN, Safety Engineer; ROBERT SPANG, Ship Fitter Superintendent; LEE ROSS, Sheet Metal Superintendent; CAL GROVE, Rigger Superintendent; WILLIAM WILD, Electrical Superintendent; E. H. HELLIS, Pipe Superintendent; HAROLD WEBER, Labor Superintendent.

Kneeling, left to right: JOHN JOHNSON, Shipwright Superintendent; J. C. "TEX" HAYES, Yard Superintendent; L. HALLMARK, Procurement Supervisor; CHARLES SMITHERS, Painter Superintendent; LES CATTO, Crane Superintendent.

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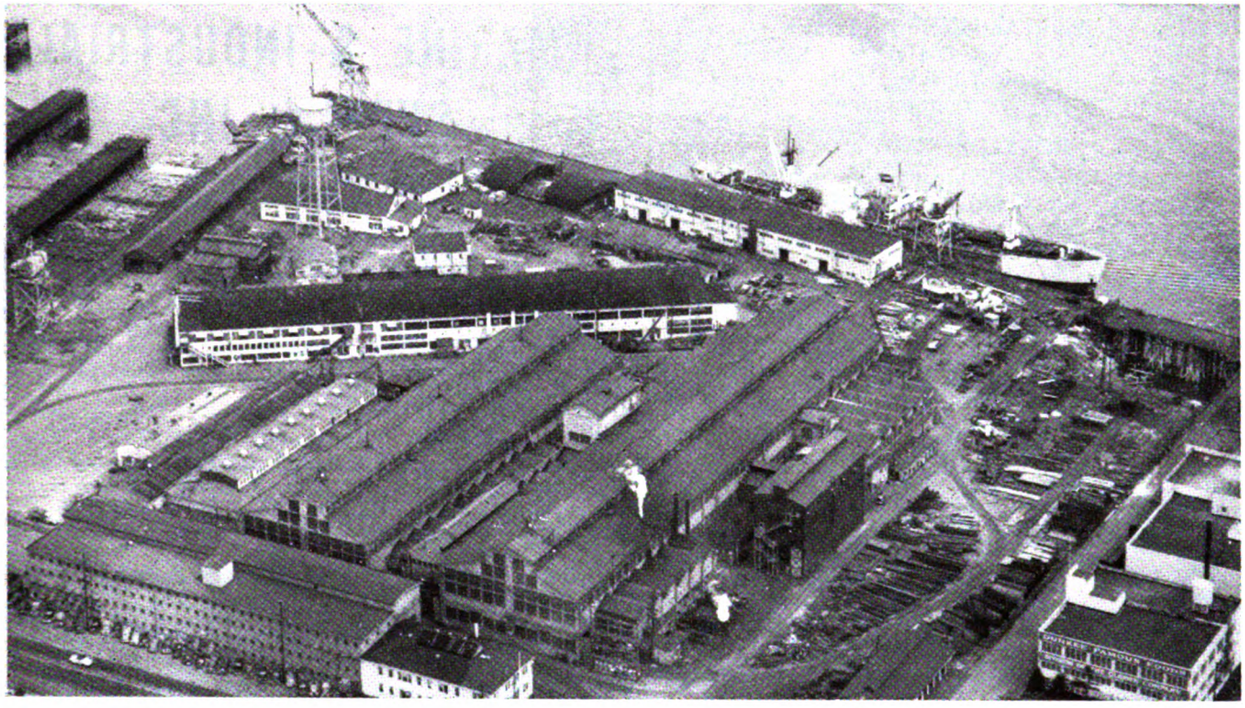
SHIP REPAIR
SHIP CONVERSION



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Insulation & Refrigeration

Insulation in the storage space decks and deckheads consists of six inches of cork over the deck plates, over which two inch T. & G. planks are laid. A two inch thickness of cold lay mastic is applied over that covering. Bulkheads are first coated with bitumastic, then a seven inch thickness of fiberglas is applied. With tar paper used between for vapor seal, the fiberglas is held by a bulkhead of one inch T. & G. planking.

Arranged in 21 coil groupings, each with separate controls, pipe coils form an ammonia direct expansion system which practically hides sidewalls and ceiling. Battens are installed to protect the piping. 8,000 pounds of ammonia are required to charge the entire system. To gain as simple operation as possible a single stage compression system is used. The system is so arranged that any or all compressors can be thrown on the freezing tanks or on the holding coils.

Approximately 100,000 board feet of cork board and 50,000 board feet of fibreglas are installed on each vessel. Jamison cold storage doors are fitted in all 'tween bulkhead openings. All insulation, including reconditioning of engine room pipe coverings and elsewhere aboard the ship, was supplied and applied by Asbestos Supply Company of Oregon.

Compressors

Compressors are 8 inch by 8 inch Worthingtons. Four are installed on each ship, two driven by 125 hp Gray marine diesels, and two electrically driven by airplane catapult motors. To meet the problem of excessive vibration, hydraulic couplings with V belt connections are used between the diesels and compressor.

For mother ship operations the ship is fitted with additional tank and storage spaces, a machine shop, an ice crusher and slinger, and other accessories to completely service the fishing fleet. Ice crusher and slinger are to be used to supply crushed ice to small boats from cake ice stored in the refrigerated spaces on the outbound leg. Fresh water, fuel oil, lube oil, and ship stores replacements for the small boats are to be carried in the added tank and storage spaces.

Special Paint Job

Original crew quarters on the second deck have been altered to accommodate three in a room certificated for nine, and otherwise arranged for comfort of officers and men, and to feed and bunk crews from the small boats in emergencies. Taking advantage of its properties to re-

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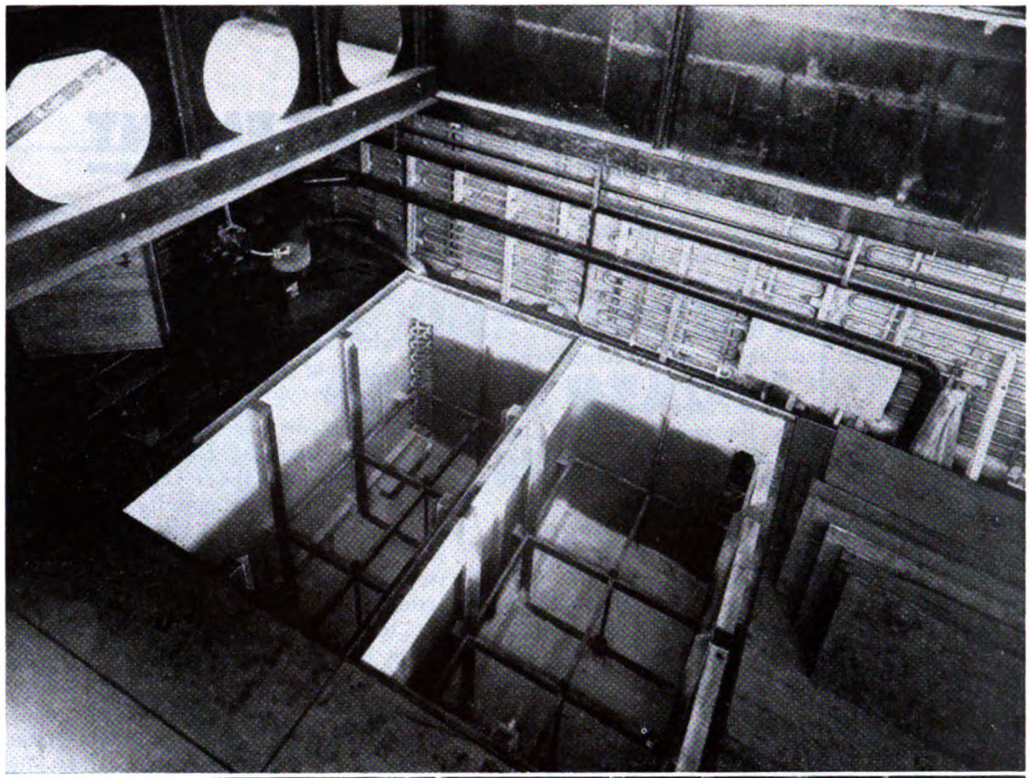

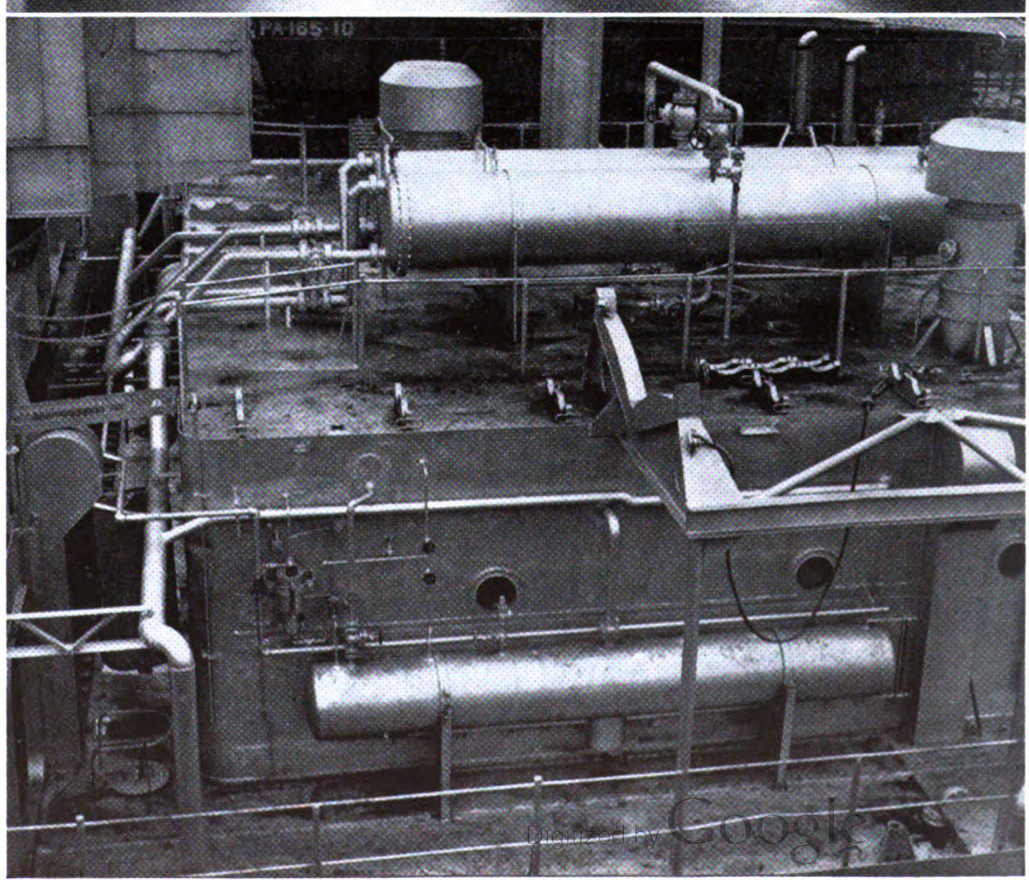

TOP . . . Brine tanks aboard the freezer ships. Six coats of Amercoat applied to exposed surfaces. Painted white so that they can be used for outward voyages. Fish will commit suicide if painted any color other than white.

CENTER . . . Nearly six miles of pipe installed in each ship for reefer ammonia system. Section of storage space before battens placed, shown in this picture.

A The LOG photo.

BOTTOM . . . Arrangement of condensors, receivers, and circulating water topside on mv. SAIPAN shown here.

A Lawrence Barber photo.

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FOREMEN ARE MANAGEMENT

(Continued from Page 39)

members are now inconsistent with their obligations under the contract to refrain from work stoppages. From the evidence so far it appears that the strike of walking bosses and the refusal of longshoremen to pass the picket lines are not merely actions taken for the sole gain and advantage of the walking bosses but on the contrary have been taken for the purpose of strengthening the position of the Union by enforcing its demands for recognition by the Employers as collective bargaining agent of the Walking Bosses."

The employers immediately reopened the port and three days later, on October 10, Miller handed down his final decision, charging that the union was in "violation of its contract of June 16 1947, and such work stoppages shall be discontinued and work resumed accordingly and the ILWU and each of its members shall take all necessary steps to accomplish the resumption of operations."

The impartial Chairman further stated: " . . . the picket lines which have been established and maintained by walking bosses and foremen and the conduct of longshoremen in stopping work in refusing to pass these picket lines are all actions taken by members of the ILWU in cooperation for the purpose of enforcing the demands of that union upon the Waterfront Employers."

This decision upheld the contention of the employers that the picket lines were "collusive" and reversed the decision Impartial Chairman Clark Kerr handed down August 12. After a brief skirmish by the union when it refused to return to work because, it claimed, the employers were planning "discrimination," the thirteen week strike was over at 9:30 A.M. on October 14.

Conclusion

From the foregoing series of articles can be seen the developments in the West Coast waterfront labor situation and what management is doing to solve the crippling strikes which have beset the industry over the past decade.

The problems are not yet solved. Indeed, they are far from being solved completely. But the solution is in the making—and it is urgent that little time be wasted. Nearly every member of West Coast steamship management interviewed in gathering material for these articles believed it was up to the industry to make its men—walking bosses, mates, and engineers—*a part of management in fact as well as fancy.*

An innocuous little item appearing in the official organ of the Masters Mates and Pilots in January of this year vividly demonstrates that despite the fact management won its point during the 1946 strike, the causes of the strike are still germinating. The item urged all members to gird themselves for battle to obtain a *rotational system of hiring.* It was the *union members* who forced the union to abandon this cause during the '46 strike. But will they again? And must we have another month-long tie-up of the nation's shipping?

It should no more occur to a ship's officer or a walking boss to strike for what he wants than it does to a port engineer, marine superintendent, or a vice president. These front line foremen are in fact an integral part of management. The job which needs to be done is convincing them that they *are* a part of management, that they are being *treated* as part of management, that their work is *appreciated* by higher members of the management team, and that their *need* for a *union* is similar to any professional man's need for a professional society.

When these men look upon their union in that light the industry can rest assured of having the efficient merchant marine it so badly needs. It can be done. And it looks as though management is going to do it.

‡ ‡ ‡

L S T Conversion

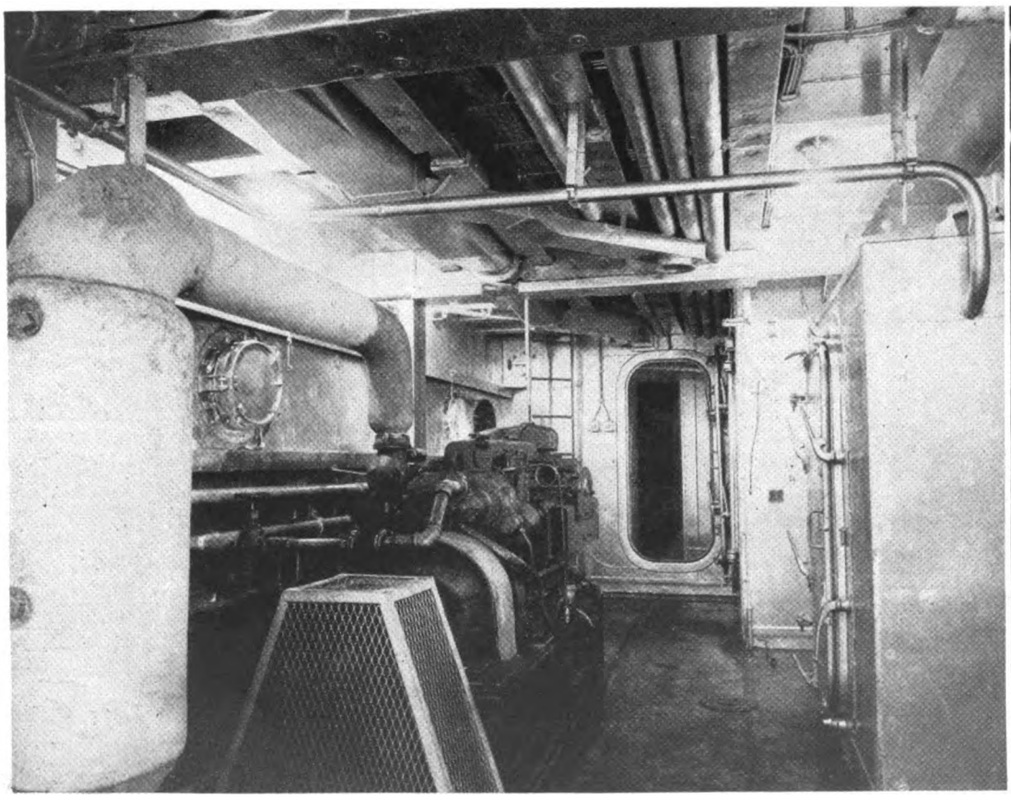
(Continued from Page 49)

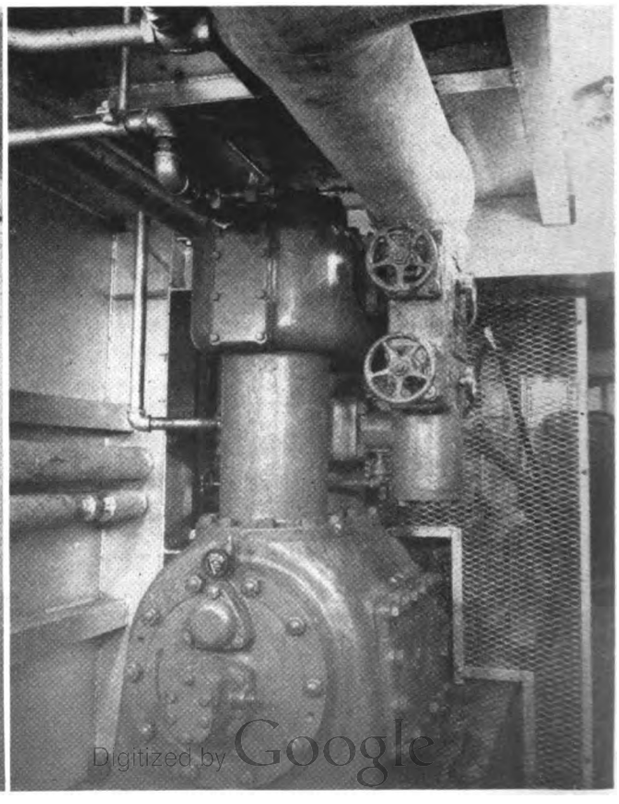
flect heat, aluminum paint supplied by W. P. Fuller and Company, Portland, and Matson Brothers, Seattle, is used throughout on the superstructure including coatings on the exposed decks. Interiors in crew quarters are painted pastel green. Objective of this is to provide a color restful to the eyes by nullifying glare from the aluminum deck coatings. Two coats of Hart and Burns Navicote anti-corrosive and two coats of Navicote anti-fouling bottom paints were applied.

Amercoat applications were made by Marine and Industrial Supply Company of Seattle and Portland under the supervision of Allister MacKinnon. Refrigeration equipment was supplied by Columbia River Packers Association through Harris Ice Machine Works, and installed by WISCO workmen.

LEFT . . . Diesel drive on regulation LST, the mv TINIAN, is placed in 2nd deck passageway. Exhaust muffler on the left. Manifold cabinet, one of dual system of control valves from which 21 separate coil groupings can be regulated, on the right.

RIGHT . . . Worthington compressor on the mv TINIAN is installed on the 3rd deck. V belt connection between diesel drive and compressor is hidden behind the screen. Cork lagging is used on the suction mains shown at top of picture.





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LIFE finds NAVICOTE has no heart...

The January 5, 1948 issue of LIFE carried a picture story of a boat bottom that had been painted, in stripes, with NAVICOTE ond seven other antifouling paints. This test, conducted in the barnacle infested waters at San Diego, was used by LIFE to show graphically that the NAVICOTE application *alone* remained clear of fouling when the boat was removed from the water (on all other stripes marine forms had grown several inches thick).

As the test boat was placed in the water, the panel shown here was hung over the side (design of heart having been painted with old-type paint... the rest of panel was NAVICOTE). Removed from the water at the same time as the boat, this panel *proves* that NAVICOTE has no heart!

NAVICOTE *Marine Finishes - Born of the War... Bred to the Sea*

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LUBRICATION OF MAIN PROPULSION POWER PLANTS ABOARD SHIP

Part I of this article was in the February issue of The LOG.

PART II

The Lubrication of Diesel Engines

Of the four types of main engine propulsion plants in general use aboard ship, lubrication of the Diesel engine presents the most problems.

The low and medium speed engines which have been in common use in past years will operate satisfactorily on straight mineral oils that have been in general use. This is because the crankcase and cylinder wall temperatures are relatively low and operating conditions are mild.

However with the advent of the higher output Diesel engines and as greater loads are taken from the older engines, cylinder wall and lubricating oil temperatures have steadily increased and with them the problem of piston ring sticking, piston lacquering, cylinder wear and bearing corrosion. These engines operate at high piston wall temperatures and their lubrication is complicated by the fact that an oxidizing flame with considerable excess air is present in the cylinders during the power strokes. In addition, residual oxidation products from the unburned fuel may deposit out in the ring belt areas which will increase the tendency of the piston rings to stick. See *Photograph 3.* Piston ring sticking results in the loss of power, improper combustion and, if allowed to progress, overheating and seizure of the pistons may occur which will necessitate a complete engine overhaul. It is for these heavy duty engines that the additive type Diesel oils were developed.

By E. F. GRIEP* and F. J. HANLY**

There are two general classes of lubricating oils being used today for the lubrication of Diesel engines. They are as follows:

1. Uncompounded lubricating oils.
2. Compounded heavy duty Diesel engine lubricating oils.

The uncompounded straight mineral oils are no longer recommended for severe service in high output Diesel engines and eventually probably will be replaced by additive oils of various types which have been in general use for several years and have proven to be far superior to straight mineral oils for general lubrication.

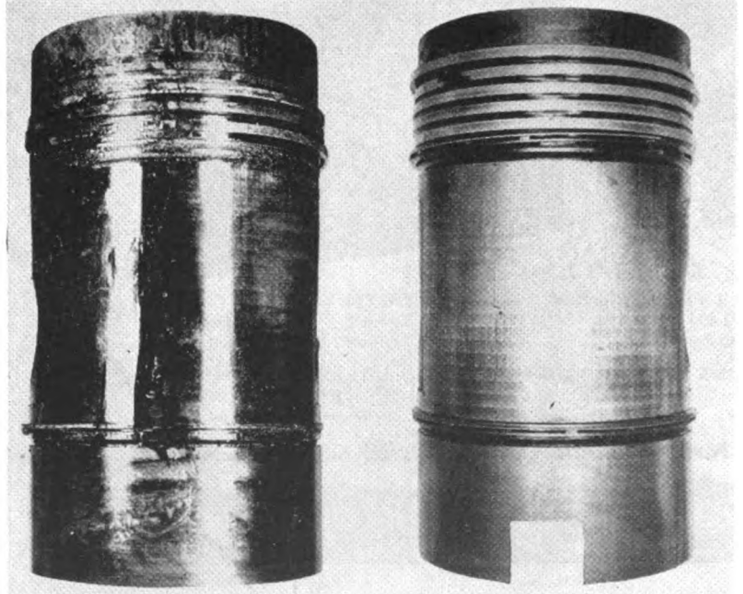
The heavy duty Diesel engine lubricating oils are commonly referred to as "additive," "compounded" or "detergent" oils. They consist of a well-refined base mineral oil to which various synthetic organic compounds have been added. These compounds have the following beneficial effects on the performance of the base lubricants:

1. The additive contains oxidation and corrosion inhibitors and its presence reduces the formation of organic acids, sludge and other oxidation products in the lubricant. There is also some evidence which indicates that the inhibitor alters the character of the oxidation products and makes them less gummy.
2. It also contains a foam inhibitor which releases the formation of foam when the oil is intimately mixed with air or gas. See *Photograph 4.*
3. The compounding material contains a powerful detergent which keeps the rings free, reduces the formation of lacquer and keeps the engines clean. The detergent acts in a manner common to all detergents. It washes away and carries in suspension the oxidation products formed by partial combustion of the lubricating oil film and prevents the deposition of lacquer and gummy materials in the ring belt area which cause piston ring sticking.

Presented before the Northern California Section of The Society of Naval Architects and Marine Engineers, December 30, 1947.
**Product Acceptance Department, Standard Oil Company of California.*
***California Research Corporation.*

PHOTOGRAPH-3

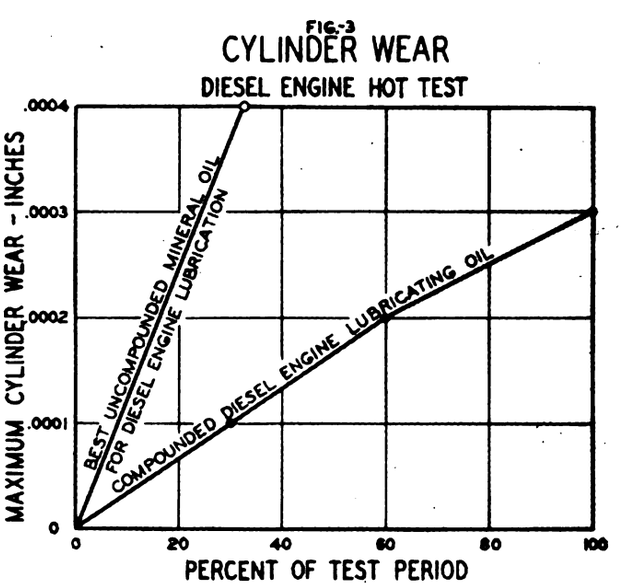
PISTONS FROM LARGE MARINE DIESEL ENGINE
EFFECT OF COMPOUNDING ON RING STICKING AND PISTON DEPOSITS
HORSEPOWER: 67 HP/CYLINDER
SPEED: 265 R.P.M.
CYCLE: 4 STROKE
TEST DURATION: 1 YEAR



MINERAL OIL
4 STUCK RINGS

COMPOUNDED DIESEL ENGINE LUBRICATING OIL
ALL RINGS FREE

FIG.-3



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Common hand soap is a detergent and the action of the additive agents used in compounded Diesel oils in the engine can be compared to the use of hand soap. If the hands are washed in clear water without using soap, they remain dirty while the water is still clean. If the soap, a detergent, is used the hands become clean and the dirt is carried off into the water, which becomes dirty. In the case of the compounded oil, the engine remains clean while the oil becomes dirty. Therefore, while using these oils, one should not be concerned if the oil turns dark or even black in color after only a few hours of use.

The carbonaceous materials carried off into the oil are in a very finely divided form and are surrounded by a protective film which prevents them from settling out on the engine parts or damaging the frictional surfaces.

4. The compound in many of the oils improves the affinity of the lubricant for metal surfaces and thus reduces cylinder wall wear and inhibits the formation of rust in the presence of moisture. In double acting engines it reduces the formation of lacquer deposits on the piston rods and in the stuffing boxes and thus prevents high wear and scuffing. See *Figure 3.*

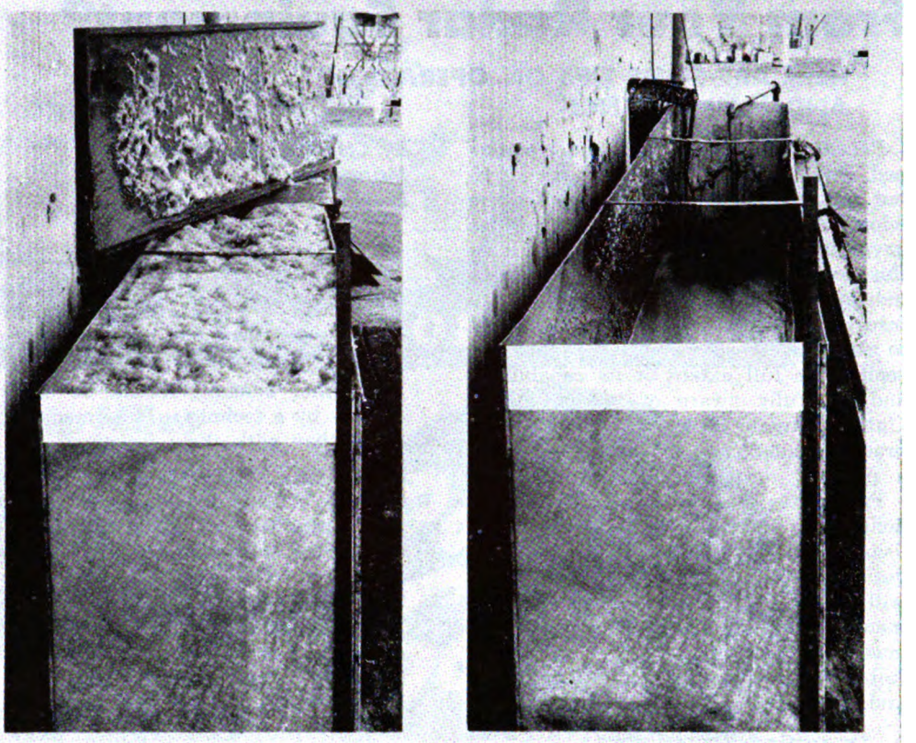
There are certain characteristics of compounded Diesel engine lubricating oils that differ from those found in conventional straight mineral oils. These are as follows:

Water in additive oils. Water contamination of either mineral oils or additive oils is objectionable as it accelerates the formation of stable emulsions and corrosion of engine parts. A small quantity of water is no more harmful in high quality additive oils than in mineral oils but a large quantity (more than 10%) may cause some loss of additive.

Centrifugal purification of heavy duty Diesel oils. The centrifuges should be operated as separators, i.e., using a water sealed bowl and water discharge connections in centrifuging heavy duty Diesel oils. When the centrifuges are operated as separators it is necessary to prime the bowl at the start of each run. Only fresh water should be used for priming and the temperature of the water should be as close as practicable to 60°F. Hot water should not be added to compounded oils while centrifuging because of the danger of forming stable emulsions and removing the additive. The temperature of the lubricating oil to the centrifuge should be maintained within the range of 160-180°F to facilitate the removal of solids and water. Furthermore, the flow rate should be maintained at the rated capacity of the purifier and at its maximum designed speed unless treating emulsions.

PHOTOGRAPH-4

FOAMING WITH COMPOUNDED DIESEL ENGINE LUBRICATING OILS



COMPOUNDED OIL WITH NO FOAM INHIBITOR

SAME COMPOUNDED OIL AFTER ADDITION OF FOAM INHIBITOR

Foaming

Stable foam was sometimes formed when compounded Diesel engine lubricating oils as originally developed were mixed with air under certain conditions of extreme agitation. However, difficulties from foaming are rarely encountered with modern compounded oils.

The Mixing of Heavy Duty Oils

Heavy duty oils and straight mineral oils are in general miscible. However, to obtain the maximum benefit from additive oils they should not be mixed with straight mineral oils as this reduces the level of compound in them.

Oil Filters

The metal screen type oil filters, the absorbent cotton waste or paper pulp type and centrifuge will adequately clean compounded detergent lubricating oils and have no detrimental effect on the compounding materials used. Earth type or chemically active filters should not be used with additive oils as the additive will be removed. The performance of the filters should not be judged by the color of the oil as the detergent oils normally become dark in color after use.

Sight Feed Oilers

Liquid filled sight feed oilers should be filled with distilled water as the minerals present in some tap waters may form an emulsion with additive oil and rapidly cloud the sight glasses necessitating frequent cleaning. Slight clouding will be experienced with distilled water, but the disadvantage of cleaning the sight glasses at monthly intervals compared with the benefits obtained from the use of additive oil is small.

Corrosion

Heavy duty detergent lubricating oils are not corrosive. Should ground surfaces be found etched or the bearings found to be corroded, it is probably that contamination of the lubricant by water or partially burned fuel is responsible. It is important that fuel systems be kept in good repair and adjustment at all times. The presence of water or partially burned fuel in lubricating oil is to be avoided in any case whether straight mineral oil or additive oil is used.

Purging of Dirty Engines

In dirty engines a detergent oil will gradually remove gummy and carbonaceous deposits. This material, being carried in suspension in the oil, will tend to clog oil filters in a relatvely short period of time. It will also be necessary to clean the bowl of the centrifugal purifiers at relatively frequent intervals when the oil is introduced into an engine that has been previously using straight mineral oils. Normally a dirty engine will be cleaned with one or two fillings of the sump, depending on the condition of the engine and the quantity of the oil used.

Oil Drain Periods

The efficacy of a compound oil depends upon the amount of additive material it contains. This material is consumed in preventing the formation of

(Continued on Page 76)

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Are You Getting The Best From Your Radar Equipment?

HERE ARE SOME TIPS ON OPERATION AND MAINTENANCE

By CHARLES W. CHATTIN
Manager
Marine Electronic Engineers

Recent collisions involving radar equipped ships do not discredit radar itself, but rather point to the necessity for the adoption of comprehensive policies governing the use and maintenance of this excellent aid to navigation. It is indicated that steps must be taken to insure good equipment operation and to see that those using it are able to realize the full extent of its capabilities and are fully aware of its limitations. Until adequate policies are put into practice, radar cannot be relied upon as a primary anti-collision device.

Procedures recommended to correct deficiencies indicated by reports on collisions and by other observations are outlined below. If put into practice they will answer most operational requirements. However, training and experience are necessary in order to realize full benefit from the radar equipment and to adequately meet all situations.

A. Operation Procedures

1. *CONTROL SETTINGS* (Radar in Use):

a. *RANGE SCALE* should be at the maximum range necessary to show the first contact of any possible new target—usually about 15 to 20 miles full scale. Shorter scales should only be used in restricted waters or to aid in obtaining accurate information concerning targets at close range.

b. *GAIN* should be high enough so that a small amount of "snow" is appearing on the scope at all times.

c. *SEA RETURN* of *STC* control should be set so that a small amount of sea return is showing at all times.

d. *RANGE MARKERS AND DIAL LIGHTS* should be turned off and kept off, and turned up only when needed.

e. *FTC* control (if provided) should be kept off and used only if it is suspected that a target might be obscured by weather conditions.

f. Other controls should be adjusted only by a technician or someone fully familiar with their function.

2. *OBSERVATIONS* of the scope should be made at least once every two minutes during conditions of low visibility and ordinary seas and every one minute if there are heavy seas. Two full revolutions of the sweep should be observed each time. The range scale setting, amount of sea return, and general scope condition should be noted as well as the appearance of any targets.

3. *UNDERWAY RADAR NOT IN USE:* Leave on "standby."

4. *IN PORT*: Secure power only if sufficient heat is provided in the equipment to prevent the collection of moisture.

5. *A RADAR OPERATION LOG* should be kept to provide the following information:

a. The general operating *CONDITION* of the radar during each watch if the radar is in use. This should include the maximum ranges noted on specified targets, amount of sea return with the control set for maximum showing, and the "ringing time" if echo box equipment is provided.

b. The *TIME* the radar is turned "on" and "off".

c. The time, range, bearing, and identification (if finally established) of the first contact of any target.

d. Any information regarding unusual occurrences.

6. *A RADAR PLOT* should function in order to completely utilize radar information. Considerable information regarding the movements of other ships may be gained by using the face of the scope as an elementary maneuvering board. A grease pencil and special scales are necessary. More exact information will be gained by using radar ranges and bearings for other pilots.

7. *TRAINING* should be provided for all persons operating the radar. This can be accomplished by attending the special course at the U. S. Maritime Service Training Station, a shipboard training program conducted by qualified personnel, and by reading instruction books and other literature. Experience in target identification and radar navigation should be gained during conditions of good visibility.

"The Antenna should be as high as practicable with no major obstructions for 360° of the horizon and 15° from level vertically under all conditions of cargo loading," according to Charles W. Chattin, Electronics Engineer. Here is pictured the Antenna of Raytheon's Mariners Pathfinder radar on the foremast above the crow's nest of the SS AMERICA.

B. Maintenance Procedures

1. A complete *RADAR EQUIPMENT RECORD* including the following should be kept:

a. A check list for routine preventive maintenance services.

b. A log of equipment repairs and modifications, including all symptoms of failures.

c. A file of service reports by service engineers.

2. At least one officer should be instructed on simple maintenance procedures. A simplified trouble shooting chart should be prepared for his use. He should know how to replace the scope tube, magnetron, T-R tubes, crystals and local oscillator and to make all ordinary tuning adjustments.

3. Regular maintenance checks at the home port should include routine preventive maintenance, necessary repairs, and a discusson of operational problems with the ship's officers.

(Continued on Page 57)

"The Indicator Binnacle should be located in the wheelhouse . . ." Shown here is Second Officer Richard Ridington, Navigator of the SS AMERICA at indicator of Raytheon's Mariners Pathfinder radar located in the wheelhouse of the AMERICA.

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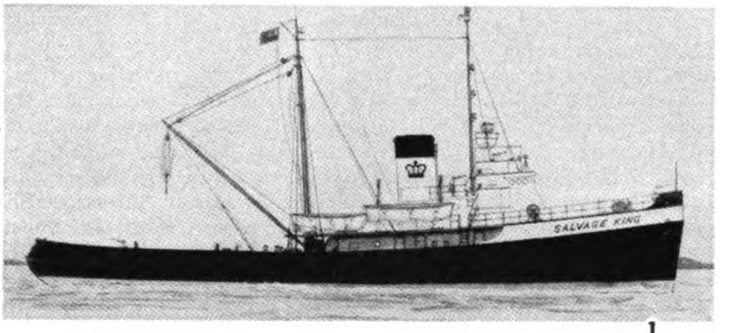

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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

Ivey Elected Chairman Of New York's Board

A. J. Ivey, port engineer, Alcoa Steamship Co., New York, was elected chairman of the board of directors of The Society of Marine Port Engineers, New York, N.Y., Inc., at the February 9th board meeting. Mr. Ivey succeeds O. H. Waller, port engineer, Lykes Bros. Steamship Co., who served during 1947. Mr. Waller continues as a director.

To fill the newly created office of second vice president, the directors elected T. A. McQuilling, operating manager, marine, Pan-American Petroleum & Transport Co., Inc.

Henry S. Cable, assistant superintendent engineer, Isthmian Steamship Co., was elected to the board of directors for the unexpired term of F. W. Gaines. Mr. Gaines, superintendent engineer, Tankers Co., Inc., who was elected first vice president of the Society at the annual election January 21st, automatically became a member of the board of directors.

By unanimous vote the board of directors expressed the Society's appreciation to Mr. Waller for his work as chairman during the past year.

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Commander B. C. Edwards, general superintendent of Agwi Lines, Inc., was reelected to the presidency of the Society of Marine Port Engineers, New York, N.Y., Inc., at the first meeting in 1948.

New members elected to the Board of Directors of the Society were: G. L. Bennett, assistant manager, Port of New York, Standard Oil Company of New Jersey; J. V. Mulcahy, superintendent engineer, Robin Line; E. J. Tracy, superintendent engineer, Agwi Lines, Inc.; R. C. Hartmann, port engineer, Moore-McCormack Lines, Inc.; C. W. Clark, assistant port engineer, Waterman Steamship Company.

Continuing members of the Board of Directors are: W. A. Dunbar; A. J. Ivey, port engineer, Alcoa Steamship Company; O. H. Waller, port engineer, Lykes Bros. Steamship Company; F. W. Gaines, superintendent engineer, Tankers Company, Inc.; C. N. Guckert, port engineer, Robin Line; J. S. Jackson, superintendent engineer, Polarus Steamship Co.; and H. W. Mikkelsen, marine superintendent, Erie & St. Lawrence Corp.

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Puget Sound Engineers Stage Annual Dinner Dance

With friends of the Society from shipyards, service and supply firms in attendance, the Society of Port Engineers of Puget Sound held their annual banquet and dance in January. Staged to honor outgoing officers and to install incoming officers the program also included a floor show and a display of posters entered in the poster contest promoted by the Society. Decorations included house flags loaned by steamship companies and agents. A capacity of 214 attended the affair.

With L. J. Perry, marine surveyor, acting as master of ceremonies, retiring president J. L. Sweetin introduced H. V. Moore, Matson Line, as the 1948 president. Other officers installed included S. K. Smith, American Bureau of Shipping, vice president; Alex D. Stewart, The LOG, secretary-treasurer. Members installed on the board of governors included M. V. Felton, Alaska Steamship Company; John W. Elkins, Board of Marine Underwriters of San Francisco; H. E. Lovejoy, Puget Sound Freight Lines; Merl Johnston, Olympic Steamship Company. Hold over governors are John C. Lass, Pope and Talbot, Inc.; John Hearing, Alaska Transportation Company.

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Diesel Power Subject of Portland Engineer Meeting

Opening with a showing of the film "Diesel the Modern Power," L. H. Wells, Fred Whittlesey and Ralph Mallett, sales and service representatives of General Motors Company, led a discussion on diesel power at the January meeting of the Society of Port Engineers, Columbia River area.

Also discussed at the meeting was a charge that drydocks at Portland are inadequate to meet requirements for big ship repair work available to Portland repair firms, followed by a declaration that two whirley cranes being offered as surplus for less than $10,000 each should be installed at the Port of Portland drydocks to expedite handling of equipment at that facility.

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Wosser Becomes President of Los Angeles Engineers

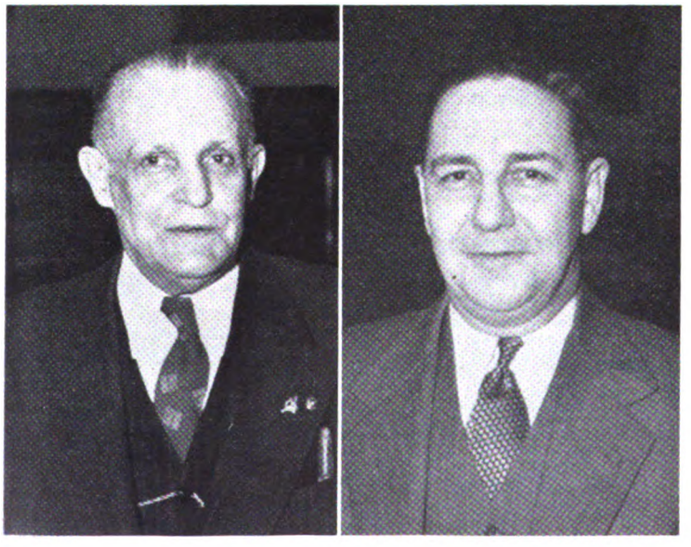
With the promotion of Leonard Landers, port engineer at Los Angeles for the American President Lines, to be assistant superintending engineer for that company at San Francisco, The Society of Port Engineers, Los Angeles, accepted his resignation as president at its January meeting and elevated vice president Joe L. Wosser, port engineer for Matson Navigation Company, to the presidency. Dan Dobler, Texas Company, chairman of the board, was named vice president and his board post will be filled later by selection of the board members.

Republic Supply Company sponsored the January meeting of the Los Angeles Society and provided a speaker, Edwin H. Price, district engineer, Manning, Maxwell & Moore, who talked on "Pressure Valves and Pressure Measurement Instruments." The Republic company is representative for Manning, Maxwell & Moore. Dick Park, manager at Wilmington; Kenneth F. Huntington, marine representative and M. D. Jayred, sales manager, represented the Republic Supply Company at the meeting.

Harry Summers, principal surveyor at Los Angeles harbor for the American Bureau of Shipping and honorary member of the Port Engineer's society, announced at the meeting he was retiring March 1st to be succeeded by John R. Black, now with the ABS at Galveston, Texas. Mr. Summers has been with the American Bureau thirty years and two months.

The Los Angeles engineers' society plans a social gathering late in April at the Biltmore Hotel.

Martin & Turner, marine sales and service engineers, will sponsor the March 3rd meeting of the Los Angeles society



COMMANDER B. C. EDWARDS, left, reelected President of the Society of Marine Port Engineers, New York, N. Y., Inc. A rising vote of thanks was given Commander Edwards by the membership for his work for the Society during the past year.

F. W. GAINES, right, elected Vice President of the New York Society, succeeding L. L. Watts. An amendment to the Constitution voted on at the same meeting provides for a Second Vice President.

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and will give a demonstration of Jabsco pumps.

Succeeding Mr. Landers as port engineer at Los Angeles is George Hoxie, assistant port engineer at San Francisco. Mr. Landers succeeded George H. Jackson, who became superintending engineer for APL at San Francisco with the recent retirement of John Jacobsen.

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LA Port Engineer Program Repeated for SF Engineers

It was Gladding, McBean & Company night at the January meeting of The Society of Port Engineers, San Francisco, with E. H. Whitney, products manager of that firm presenting motion pictures and giving a talk on refractories, their history, background, properties and good and bad points.

Present were a number of representatives of the Gladding-McBean firm together with officials of the Dee Engineering Company and J. T. Thorpe & Son, Inc., marine refractories contractors and sales agents for Gladding-McBean.

Marshall T. J. Garlinger, chairman of the Society's program committee, announced that the March meeting would be addressed by Harry Gamlen, founder and president of the Gamlen Chemical Company and Gamlen Marine Company, well-known chemical houses. The April meeting will be conducted by the Diamond Power Specialty Company and R. L. Dill, service engineer, will talk on cleaning soot from the fire side of boilers.

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Are You Getting The Best From Your Radar Equipment?

(Continued from Page 54)

C. Installation

1. The *INDICATOR BINNACLE* should be located in the wheel house in the position which allows the best practicable vision out for comparison with the scope picture and to minimize lost motion by the user.

2. The *ANTENNA* should be as high as practicable with no major obstructions for 360° of the horizon and 15° from level vertically under all conditions of cargo loading. If it is not feasible to clear all obstructions, the antenna should be well forward of the interfering object.

3. If the line voltage to the equipment varies more than ten percent under any conditions a voltage regulating device should be installed.

4. An *INTERCOM* between the radar indicator and the chartroom should be installed to facilitate radar navigation.

5. Any possible *BLIND SPOTS* should be located after an installation or major topside alteration within 15° vertically on the antenna. This should be done in smooth open water by turning the ship in at least three tight circles at slow speed while observing a fixed, easily identified, single target at the maximum range at which it will give a steady echo. The tests should be accomplished both at short range using a small target such as a buoy and at long range using a larger target such as a lighthouse. If any consistent fading of the target is noted within 150° of dead ahead, the antenna should be relocated or other alteration made as necessary to eliminate the blind spot. If a blind spot is noted astern, the relative bearings enclosing it should be posted in a prominent place near the radar indicator.

The above suggestions will not answer all of the problems concerning radar, but they do provide a program which will aid in the reduction of casualties at sea. The records recommended will aid in establishing the cause of any casualties and aid in the proper maintenance of the equipment. Experience, the standardization of techniques, and the establishment of definite policies for all ships will provide a greater distribution.

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Clark Named Cruise Director For Delta Line

Arthur St. John Clark, a purser with Delta Line since 1943, has been appointed cruise director. Currently on the DEL SUD making a survey trip, he will be located in the New Orleans office on his return.

Clark was born in Mexico of American parents and has lived for many years in New Orleans.

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American Bureau of Shipping announces the following appointments and transfers in personnel: J. Edgar Stewart has been transferred from the Pascagoula, Mississippi office to the Baltimore office of the company; Roba Yarbro of Nashville office transferred to the St. Louis office; Helmut J. Eccarius appointed to the New York surveying staff; and Spence G. Smith appointed to the staff at the New Orleans district.

LOS ANGELES PORT ENGINEERS have another new president . . . JOE WOSSER, left, Port Engineer for Matson Navigation Company, at Los Angeles, assumes presidency of the Society succeeding LEONARD LANDERS, right, of American President Lines, who only one month ago had been elected to the post and who had to resign because of being transferred by his company to San Francisco to fill the position of Assistant Superintending Engineer.

Photo to left: Sponsors of the evening, Republic Supply Co., from left to right: DICK PARK, Area Manager of Republic, Wilmington, with EDWIN H. PRICE, District Engineer on the West Coast, for Manning, Maxwell & Moore, Inc.; M. D. JAYRED, Sales Manager, and KENNETH F. HUNTINGTON, Marine Representative, both of Republic Supply Co., Wilmington. PRICE, Assistant Supervisor of shipbuilding, U. S. Navy, during the war, was the speaker of the evening at the February meeting.

REFRACTORIES MEN AT S. F. PORT ENGINEERS: Standing, left to right: A. E. WEIDENBACKER and JOHN BAXTER, Gladding, McBean & Company; TED KEELIN, Dee Engineering Company; ALAN CAMPBELL, Gladding-McBean; TOMMY DEE, Dee Engineering; H. R. GOODRICH and CLAYTON ROY, Gladding-McBean. Seated: R. E. MASTERS, J. T. Thorpe & Company; CHRIS LARSEN, Dee Engineering, E. W. WHITNEY and LLOYD PAULSEN, Gladding-McBean. In the center is a sample can of Gladding-McBean's "Tenax," high temperature cement, and TOMMY DEE is holding in his hand a Gladding-McBean Diablo Brand fire brick, recommended for marine use.

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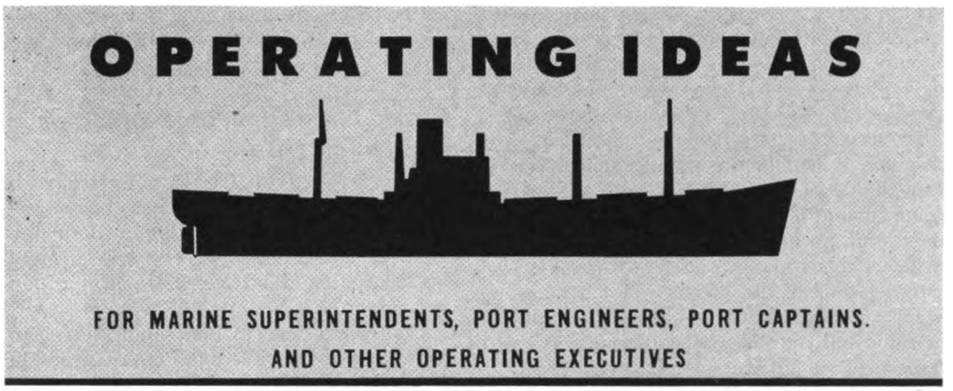

How To Improve Performance Of Your Boiler Feed Pumps

By ROBERT P. GIBLON
Marine Engineer
George G. Sharp, N.A.

One of the most troublesome of all the auxiliary machinery units on steam driven vessels is the boiler feed pump. The difficulties experienced by the operating engineer with these units have been particularly noticeable in the last few years due to the relatively large number of U. S. Maritime Commission "C" and Victory type cargo and "T" tanker type vessels that have been constructed with power plants that operate with relatively high boiler steam pressures of from 450 to 600 psig. The majority of these vessels are fitted with one or two multi-stage steam turbine driven centrifugal pumps which are normally used when the vessel is at sea. The following will, therefore, deal only with this type of unit when installed in conjunction with direct contact type deaerating feed heaters. However, some of the comments may apply to steam reciprocating and motor driven plunger type feed pumps as well.

Difficulties Encountered

The difficulties experienced with these pumps has been from three sources, pump design features, improper installation and improper operation.

The difficulties encountered due to the manufacturer's design and construction features cannot be controlled by the operating engineer. However, the expense of repairs and replacement can be materially reduced through frequent inspection and proper maintenance. It is particularly important that the operator follow the maintenance instructions furnished by the pump manufacturer and that the pump and turbine unit be opened up for inspection at regular intervals so that repairs can be made before a complete breakdown of the equipment occurs. One of the common difficulties experienced has been from inter-stage leakage and here regular inspection can reduce the damage since repairs can be made before the holes between the stages are worn so large that they are difficult to repair.

As for the difficulties that come from improper installation, these can often be eliminated by the operating engineer if relatively minor changes are made to the existing installation, either by the ship's crew or a repair yard. In order to determine if changes can be made to the existing installation to improve the pump performance and reliability, it is necessary to understand the basic requirements for a good installation. In brief these requirements are as follows:

1. The pump turbine should have a source of dry steam that is delivered at a constant pressure near that specified by the pump manufacturer. To prevent foreign matter from damaging the turbine or governor valves, a steam strainer with blowout valve should be fitted in the line to the pump just after the steam shutoff valve.

2. The turbine casing should be fitted with at least a sentinel relief valve or better a full flow relief valve or spring loaded exhaust valve. If a spring loaded exhaust valve is fitted it should be fitted with a jacking device so that the valve may be held open whenever the unit is in operation and thus reduce the back pressure on the turbine.

3. Suitable drains should be installed for the steam supply line, exhaust line, turbine casing and gland packing.

4. A rigid foundation should be provided and the alignment between the turbine and pump should be as required by the pump manufacturer.

5. An ample supply of clean cooling water should be available at all times for the lubricating oil cooler and turbine and pump bearings. A good source of cooling water is the auxiliary circulating water system.

6. A feed discharge pressure governor should be provided in addition to the turbines' speed limiting governor or it should be incorporated with the speed limiting governor so that the required boiler feed water pressure is available. This governor should be either a constant pressure type or for an even better installation should be of the differential type that maintains a constant differential across the boiler feed water regulator valves. When the feed discharge pressure governor is not incorporated with the speed limiting governor it is advisable that the turbine be fitted with an overspeed trip in addition to the speed limiting governor.

7. If possible the feed discharge piping and high pressure heaters should be designed to withstand full feed pump shutoff head (head at zero flow) and then it will not be necessary to fit a water relief valve, which is a troublesome item, on the pump discharge. If it is not feasible to design the discharge system to withstand shutoff pressure, then a relief valve must be fitted set at the maximum allowable pressure. In addition to the relief valve on the discharge it is advisable to fit a small relief valve on the pump suction to protect the pump suction valve. This relief valve is desirable since small leakages through the discharge valve while the unit is secured will result in high pressure at the pump suction with the result that the suction valve will often break.

8. All pipe connections to the pump should be made so that they do not impose undue stress on the pump and turbine casing.

9. The pump should be fitted with a suitable method to prevent overheating when the feed requirements of the boilers are near or are zero.

10. The source of feed water to the pump should be such that the suction pressure at the pump is always sufficiently above the feed vapor pressure to prevent flashing (boiling) at the eye of the pump impeller.

Prevention of Overheating

The first eight requirements are believed self-explanatory. However, the last two mentioned deserve additional explanation.

In a centrifugal feed pump due to the relatively high total dynamic pressure developed considerable energy is absorbed by the pump unit whether the pump is delivering water at or near maximum capacity or is operating near the shutoff condition. In the case of an 8500 SHP AP3 Victory Ship the turbine driven feed pump will perform as follows:

	Max. Designed Capacity	Normal Capacity	Shutoff
Gals. per minute delivered	185	155	0
Total dynamic head developed, psi	580	506	476
Turbine horsepower	111.6	84	35
Efficiency present	56	53	0
Water horsepower	62.5	44.5	0
Horsepower developed as heat	49.1	39.5	35
BTU/min. developed as heat	2080	1670	1480

From the above it will be noted that considerable energy in the form of heat is developed. When there is a flow of feed through the pump this heat can be easily dissipated in the feed water. However, when the pump is operating in the shutoff condition serious overheating of the pump will result with uneven expansion of the pump parts and resulting damage and/or wear. Some means, therefore, must be provided to remove this heat and it may be accomplished on most pumps

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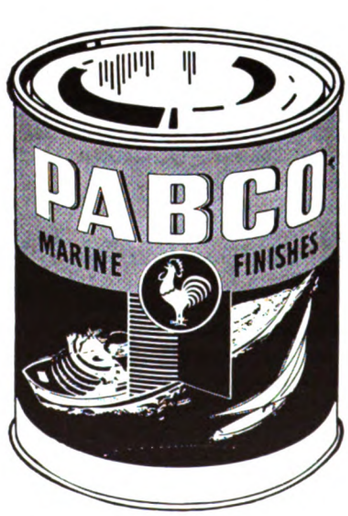

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by fitting a connection on the pump discharge so that some feed may be recirculated back to the deaerating feed heater. In the case of the AP3 Victory Ships this flow has been established at 2 0 GPM. Therefore, the temperature rise for the water passing through the pump will be 8.9 degrees F. To control the quantity of water recirculated, an orifice is fitted in the recirculating line. These orifices are usually made of a hardened alloy steel and consist of either a drilled plate, drilled bar or a number of plate orifices installed in series. Some difficulty has been experienced with these orifices either as the result of clogging with foreign matter, or from erosion of the orifice due to the high velocity of the water passing through the restriction. The first difficulty can be very serious since a clogged orifice will often result in overheating of the pump and resulting damage. This difficulty can, however, be eliminated by installing a strainer with openings in the mesh smaller than the diameter of the orifice. A simple type of "Y" strainer with blowout valve may be used for this purpose. The second difficulty, that of erosion, will result in too much water being recirculated and a corresponding reduction in the quantity of water available for feed purposes. This difficulty can be materially reduced if several plate orifices are installed in series, thus reducing the pressure drop and velocity across each orifice and resulting erosion.

On some designs of vessels one orifice has been provided for two pumps. This installation is satisfactory providing only one pump is in operation at a time. However, if two pumps are in operation such as when starting one pump to take the place of a pump in service serious overheating of one of the pumps may result.

Eliminating Recirculation

To eliminate recirculation when not needed, i.e., at normal loads, some vessels have been fitted with an automatic recirculating valve installed in the pump discharge. This valve is so designed that it maintains a sufficient flow of feed through the pump at all times and thus prevents overheating.

To eliminate the orifice and automatic valve entirely, some makes of pumps are fitted with a leakoff from the high pressure end of the pump. This leakoff, which is connected to the deaerating heater, is in operation whenever the pump is in operation and circulates sufficient water to prevent the pump from overheating.

It is most important that the feed water delivered to the pump from the deaerating feed heater be at the proper temperatures and pressure at all times to prevent flashing at the pump, with resulting loss of suction and often times severe damage to the unit. On the U. S. Maritime Vessels discussed the designed temperature for the feed water in the deaerating feed heater is 240 deg. F. which is equivalent to 10 psig steam (vapor) pressure. On these same vessels the normal required suction pressure at the pump inlet flange is 20 psig when handling 240 deg. F. feed water. Another way to express it is that it is 10 psi in excess of the saturation pressure at the feed temperature. To secure this pressure it is necessary to locate the deaerating heater as high as possible above the feed pump, so as to obtain a static head of at least 10 psi plus an allowance for friction loss and a margin of safety. On the AP3 Victory ship the design conditions, when operating at 8500 SHP with the heater one half full of feed, are as follows:

Feed heater temperature, deg. F	240
Feed heater pressure, psig	10
Static head feet (heater to pump)	41
Static head psi (heater to pump)	16.8
Pressure drop psi (heater to pump)	0.1
Pressure at feed pump suction, psig	26.7
Minimum pressure required by pump, psig	20.0
Minimum pressure less vapor pressure, required by pump, psi	10.0
Pressure at pump less vapor pressure of feed, psi	16.7
Safety margin, psi	6.7

To prevent flashing at the pump suction the temperature and pressure should not vary so as to use up the safety margin. Should the pressure in the heater be allowed to drop lower than 6.7 psi below the designed pressure when the temperature of feed at the pump suction is still 240 deg. F. flashing at the pump suction can result. This condition can arise when the vessel is maneuvering and sufficient live makeup steam is not available for feed heating.

Improper Operation of Pump Unit

As for the difficulties that are derived from improper operation of the pump unit, these can easily be eliminated by the operating engineer if he follows general good marine practice and the following:

1. The procedures as set down in the manufacturer's instruction book should be followed.

2. The desired pressure should always be maintained in the deaerating heater through proper adjustment of the control valves fitted and the turbine bleeder valve. The operator should be especially careful while maneuvering the vessel.

3. It is essential that those pumps fitted with a recirculating line connected at the pump discharge be in operation at all times when the vessel is maneuvering, in port, or wherever there is a possibility of the pump operating in the shutoff condition. If the pump has sufficient excess capacity over normal requirements it is desirable that this recirculating line be in use at all times, since the overall loss in efficiency is relatively small. The conditions are approximately as follows for an AP3 Victory vessel when operating at 8500 SHP:

Feed recirculated GPM	20
Feed required at boilers GPM	155
Feed handled by pump GPM	175
Increased steam consumption with recirculation, #/hr.	210
Additional fuel oil bbls/day with continuous recirculation	0.38

The overall loss in efficiency to the plant when operating this pump with the recirculating valve open is very small, particularly when one keeps in mind the damage that may be caused if this valve was closed at a period when the pump is operating in the shutoff condition.

Simple Form For Calculating Trim and Stability

By EDWARD V. LEWIS
Naval Architect
George G. Sharp, N.A.

Most ship's officers and operators are familiar with the methods used in calculating the weight and position of the center of gravity of a loaded ship and hence its drafts forward and aft and its metacentric height. However, in actual practice these methods are seldom used except for certain typical conditions, because of the time required to assemble the necessary data and carry out the work. It is suggested that a blank form especially prepared for each ship or type of ship would be of great assistance in making calculations under pressure on sailing day. Accordingly a sample of a suitable type of form is presented here and its use described.

The dark figures in the accompanying example should be printed on the form, and only the light figures need be filled in any particular case. In performing the multiplication and division, a slide rule should be used since it saves time and is sufficiently accurate for this type of calculation. The profile at the top of the form is for quick reference and when colored up will show visually the condition of the ship corresponding to the calculations.

The first part of the form is for cargo. In filling this in, reference must be made to the capacity plan of the ship and to the cargo stowage diagram for the particular voyage in question. The capacity plan gives the full bale capacities and centers of gravity for homogeneous cargo. Taking each 'tween deck and hold in turn, the weight of cargo in that space in tons (of 2240 lbs.) should be determined from the cargo diagram. Unless there is a very unusual stowage of cargo in the space, the fore and aft position of the center of gravity may be assumed to be the homogeneous center. However, a rough estimate should be made of whether or not the height of center for homogeneous cargo is applicable—usually the actual center of gravity is lower than the homogeneous figure. After the cargo weights and center of gravity figures have been entered in the form, the cargo may be summarized by first filling in the mo-

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ment columns, then adding weight and moment columns as shown. In longitudinal moment columns it will be convenient to use the plus (+) sign for forward of amidships and minus (−) sign for aft.

The next part of the form is for liquids in tanks. The actual contents in tons and the centers of gravity are obtained by reference to the capacity plan, the tank capacity curves or tables and the latest tank soundings. When a tank is part full, the height of the center of gravity should be corrected approximately from the value given in the capacity plan for the full tank. The contents of the tanks may then be summarized in the same fashion as cargo. In connection with liquids, however, there is an additional column for free surface effect. If not now available the free surface factors i/d (intensity divided by density) should be obtained from the designer or builder of the ship and should be tabulated on a separate sheet for all tanks. The basic free surface factors for slack tanks are originally obtained by calculating the moment of inertia (i) ($ft.^4$) of the surface of the liquid near the top of the tank about a longitudinal axis through the centroid of the surface area and dividing this by the density (d) of the liquid ($lbs./ft.^3$). In the case of fuel oil tanks reduced factors are determined which are applicable to 97% or 98% full tanks. For any specific condition the appropriate i/d value for each pair of tanks should be entered in the free surface column, and the total i/d.

For all tanks when divided by the displacement of the ship will give the free surface correction to be deducted from GM. It should be entered at the bottom of the form. If in a given condition there should be no slack tanks, it is advisable nevertheless to assume one pair of each type slack (i.e. fuel oil, washing water, potable water, reserve feed water), since this slack condition will soon be reached as liquids are consumed.

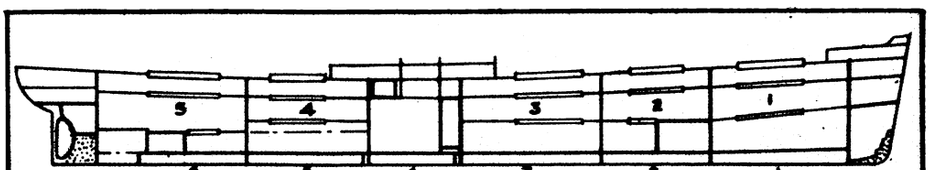
It may be noted that lubricating oil is included with fuel oil, since it is too small a quantity to be included in a separate category. The figure given is for oil in storage tanks only, since oil in the lubricating oil system is part of the light ship weight.

Having worked out the total weight and locating of center of gravity of the cargo and liquids, the summary table can be completed. Figures for the light ship should be obtainable from the inclining experiment of the ship or a sister ship, modified as may be necessary to allow for any subsequent alterations to the vessel. The figures for crew and effects will vary so slightly that a figure based on 0.1 ton per man may be used for all conditions. The figures for stores should be estimated taking into consideration that certain stores will remain essentially constant (such as paints, oils, miscellaneous rope, etc.) but that provisions will vary considerably in the course of a voyage. Standard spare parts, bosun's outfit and linen, all of which are normally considered a part of the light ship weight, should of course not be included here. Summarizing the weights

(Continued on Page 70)

TABLE OF ABBREVIATIONS USED ON SAMPLE FORM

A.P.	After Peak	KG	Distance of center of gravity above base line
D.B.	Double Bottom Tank	LCB	Distance of center of buoyancy from amidships
D.T.	Deep Tank	LCG	Distance of center of gravity from amidships
F.O.	Fuel Oil	MT 1"	Moment to Change Trim One Inch
F.P.	Fore Peak	S.W.	Salt Water
F.W.	Fresh Water		



S.S. _____ CONDITION: *Departure N.Y.* DATE: *Feb. 1948*

CARGO

HATCH NO.	'TWEEN DK.	CAPACITY BALE CU. FT.	CONTENTS	TONS	KG FT.	VERT. MOM. TONS-FT.	LCG FT.	LONG. MOM. TONS-FT.
1	UPPER	31,500	*General & unboxed autos*	*210*	*45.8*	*9 600*	*+162.2*	*+ 34,100*
1	LOWER	45,130	*General*	*590*	*32 6*	*19,200*	*160.0*	*94,300*
1	HOLD	43,090	*Cement (bags) & general*	*650*	*13.4*	*8 700*	*161.0*	*104.500*
2	UPPER	36,300	*Flour (bags) & unboxed autos*	*180*	*39 5*	*7 100*	*98.5*	*17,700*
2	LOWER	55,160	*Canned goods & general*	*790*	*28.8*	*22,800*	*99.2*	*78,200*
2	HOLD	25,520	*Steel & general*	*415*	*10 8*	*4 500*	*113.5*	*47,100*
3	UPPER	37,840	*Boxed & unboxed autos*	*75*	*40.0*	*3 000*	*40.1*	*3000*
3	LOWER	62,000	*General & boxed autos*	*520*	*27 6*	*14,300*	*32.7*	*17,000*
3	HOLD	80,310	*Steel, bags of cement, gen.*	*1240*	*105*	*13,000*	*31.5*	*39,100*
								+435,000
4	UPPER	41,100	*Boxed autos & parts*	*210*	*38.9*	*8200*	*-91.9*	*- 19,300*
4	LOWER	50,130	*Flour (bags) & general*	*720*	*28.0*	*20,100*	*92.6*	*66,600*
4	HOLD	56,690	*Steel & general*	*880*	*12 6*	*11,100*	*90.7*	*79,900*
5	UPPER	44,520	*General*	*590*	*41.6*	*24,500*	*163.0*	*96,100*
5	LOWER	68,180	*Boxed motors & general*	*820*	*27.1*	*22,200*	*1615*	*132,100*
5	HOLD	8480	*Drums of oil & general*	*120*	*9.8*	*1200*	*139.7*	*16,700*
TOTAL BELOW DKS.				*8010*		*189,500*		*-410,700*
								+ 24,300
DECK CARGO			*None*	-		-		-
TOTAL				*8010*	*23.6*	*189,500*	*+ 3.0*	*+ 24,300*

LIQUIDS

TANK NO.	CONDITION	F.S. LOSS 1/8	CAPACITY-TONS SW	CAPACITY-TONS FW	CAPACITY-TONS FO	CONTENTS-TONS SW	CONTENTS-TONS FW	CONTENTS-TONS FO	KG FT.	VERT. MOM. TONS-FT.	LCG FT.	LONG MOM. TONS-FT
F.P.	*Empty*	-	*120*									
D.B. 1	*97% full*	*110*	*185*		*170*			*170*	*2.9*	*490*	*+160.8*	*+ 27,300*
D.B. 2	*97% full*	*1650*	*305*		*281*			*281*	*2.4*	*680*	*96.3*	*27,000*
D.T. 2	*97% full*	*2950*	*885*		*815*			*815*	*13.1*	*10,650*	*113.5*	*92,600*
D.B. 3	*Slack*	*11,000*	*534*		*492*			*310*	*1.5*	*470*	*29.8*	*9200*
												+156,100
D.B. 4	*Slack*	*7580*		*315*			*200*		*1.4*	*280*	*- 33.0*	*6600*
SET	*½ full*	*70*			*135*			*70*	*20.1*	*1410*	*12.3*	*800*
F.W.	*Slack*	*270*		*74*			*50*		*36.0*	*1800*	*49.3*	*2500*
DIST. W.	*Full*	-		*18*			*18*		*14.5*	*260*	*61.0*	*1100*
LUB OIL	*Full*	-			*24*			*24*	*2.00*	*480*	*3.00*	*700*
D.B. 5	*97% full*	*1750*	*350*		*323*			*323*	*23*	*740*	*89.7*	*28,900*
D.T. 5	*97% full*	*140*	*122*		*112*			*112*	*10.9*	*1220*	*166.9*	*18,700*
D.B. 6	*97% full*	*340*	*121*		*111*			*111*	*2.4*	*270*	*149.8*	*16,600*
A.P.	*Empty*	-	*75*									
							268	*2216*				*- 75,900*
TOTAL		*25,860*					*2484*		*76*	*18,750*	*+ 32.3*	*+ 80,200*

SUMMARY

	TONS	KG	VERT. MOM.	+ LCG	FOR'D. MOM.	- LCG	AFT MOM.
LIGHT SHIP	*5300*	*30.5*	*161,650*			*10.5*	*55,700*
CREW & EFFECTS	*14*	*55.0*	*770*			*35.0*	*500*
STORES	*13*	*42.3*	*550*	*5.2*	*70*		
CARGO	*8010*	*23 6*	*189.500*	*3 0*	*24,300*		
LIQUIDS	*2484*	*7.6*	*18,750*	*32.3*	*80,200*		
DISPLACEMENT	*15,821*	*23.46*	*371,220*	*3.1*	*48,370*		

TRIM		DRAFTS		STABILITY	
LCG, FT. (ABOVE)	*+ 3.1*	MEAN, FT.	*26.0*	KM, FT. (HYDROSTATIC CURVES)	*28.72*
-LCB, FT. (HYDR. CURVES)	*+ 4.6*			KG, FT. (ABOVE)	*23.46*
GB	*- 1.5*	FOR'D, FT.	*25.3*	FREE SURF. COR., FT., i/d/Δ	*- 1.63*
MTI" (HYDR. CURVES)	*1415*	AFT, FT.	*26.7*	TRIM COR. (APPROX.), FT.	*+ .06*
TRIM, FT. = ΔGB/12 MTI"	*1.4*			GM, NET, FT.	*3.69*

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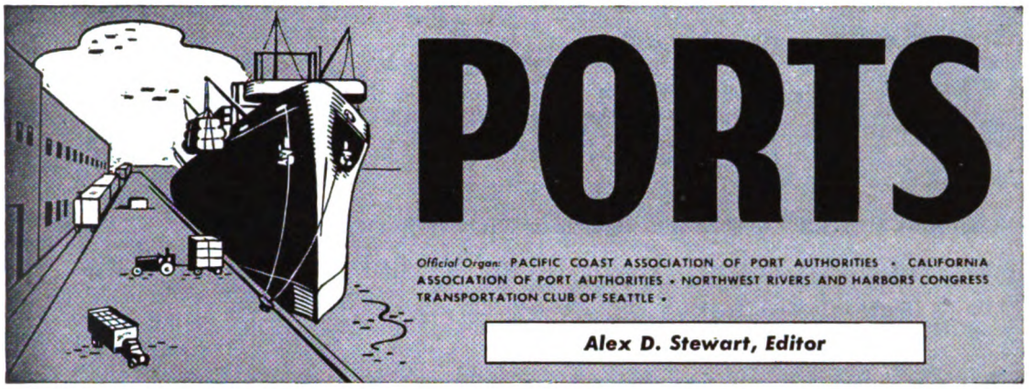

PORTS

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Alex D. Stewart, Editor

P. N. Y. A. Grain Elevator Opened on Gowanus Bay

With the loading of 240,000 bushels of Government-owned wheat the Port of New York Authority officially opened its new $350,000 grain gallery at its Grain Terminal on Gowanus Bay, Brooklyn on January 22. The wheat was loaded through the gallery directly into the ocean-going steamship PIERRE de SAUREL.

The gallery, which has a delivery capacity of about 20,000 bushels an hour, makes it possible to load grain directly into deep sea ships without the use of lighters and floating elevators that were formerly necessary in all grain deliveries at the Gowanus terminal. Elimination of such loading service will result in an average saving of 1¾ cents a bushel.

Operation of the new gallery will greatly improve the grain-handling facilities in the Port of New York and help restore this harbor to its prewar position as the grain gateway of the United States. Servicing the Port Authority Grain Terminal, which has a working capacity of 1,800,000 bushels, the gallery will help to restore the movement of grain from Buffalo to New York by way of the New York State Barge Canal. Before the war, the substantial movement of canal traffic permitted canal rates to be lower than rail charges.

All the grain intended for the French vessel PIERRE DE SAUREL originated in the northwestern states and moved to New York by way of Duluth, thence by Great Lakes steamer to Buffalo, where it was transferred to the Lackawanna and Lehigh Valley Railroads for New York. To be delivered to a French port on the Mediterranean, the grain is part of 1,700,000 bushels of special high-protein-content wheat now in the Port Authority elevator for European relief shipment by the Commodity Credit Corporation.

Grain movement through the Port of New York dropped off during the war when the Government routed most of its grain traffic away from New York to Baltimore, Philadelphia, and other Atlantic and Gulf ports. Whatever grain was moved from the terminal had to be lightered to ship's side ever since 1942 when the damaged French liner NORMANDIE was berthed for proposed repairs at the old grain gallery pier of the Port Authority Terminal, then under State control.

Before the new gallery was completed, the basic pier for it (finished March 1946) was made available for the berthing of ships awaiting assignment or tied up for repairs or unloading of ballast.

The Port Authority Grain Elevator, which was transferred to the Authority by the State of New York in May 1944, is a self-supporting facility. Of steel and concrete construction, it is one of the most modern on the Atlantic coast.

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Port of LA Convicts Captain For Causing Fire Hazard

An unusual case of interest to steamship authorities and port officials occurred in Los Angeles harbor recently when the master and second mate of a tanker were arrested, convicted and fined for "failure to take precautions while loading oil." Their negligence, it was charged, resulted in an oil spill which covered some 20 acres of water and created a serious fire hazard.

The men arrested were Captain Richard A. Moberg, master and G. S. Logue, second mate, of the Petroleum Transport Company's ss RIVER RAISIN. The skipper was arrested by Frank D. Higbee, warden of the port of Los Angeles, who exercised his authority under a local ordinance which had never been used previously in its 15 years of existence.

Captain Moberg admitted to the judge that he didn't plug his ship's scuppers but had depended upon his first mate to do this safety task.

Warden Higbee points out that in this case the malefactor and not the ship was penalized and that the action again established the validity of local ordinances enforced by the governing body of the port.

Later the ship was charged $9,000 for cleaning up the spill. The oil flowed so close to the Todd shipyard at San Pedro that work was halted for fear welding sparks might ignite the spill.

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Pennington Jogs Pacific Coast Ports to Revitalize Position

Speaker at the January meeting of the San Francisco Propeller Club was Maitland S. Pennington, vice-president of Pacific Transport Lines, whose subject was "Gateway to the Pacific."

Mr. Pennington, who was director of manning of the War Shipping Administration during the war and later secretary-treasurer of the National Federation of American Shipping, has recently spearheaded a campaign to revitalize the position of Pacific Coast ports in overseas trade with the far Pacific area.

Pacific Coast ports must do a real selling job, he said, if they wish to get their proper share of export shipping in the trans-Pacific trade, to meet and beat the competition of Atlantic and Gulf ports for cargo from the nation's midwest area.

For an example, he pointed out that Japan requires some 1,500,000 tons of coking coal to rehabilitate its commerce and industry, yet no demand has been made upon western coal producers, including those in Utah, to contribute to the Japanese shipments and route through

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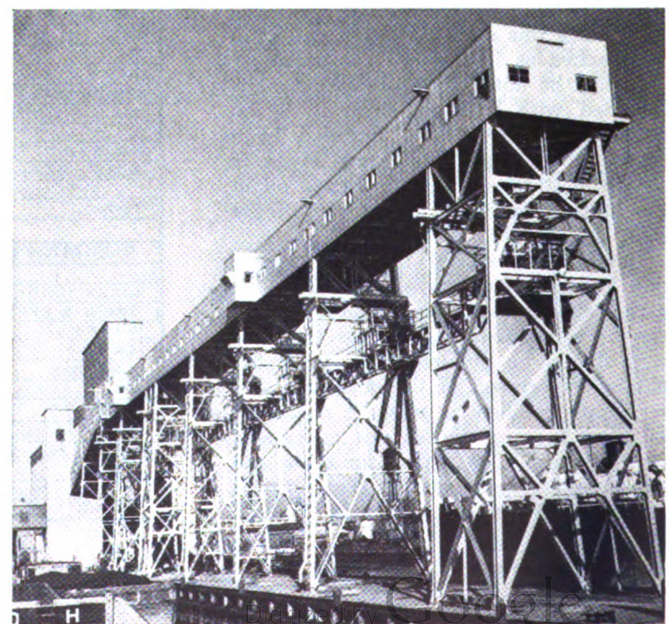
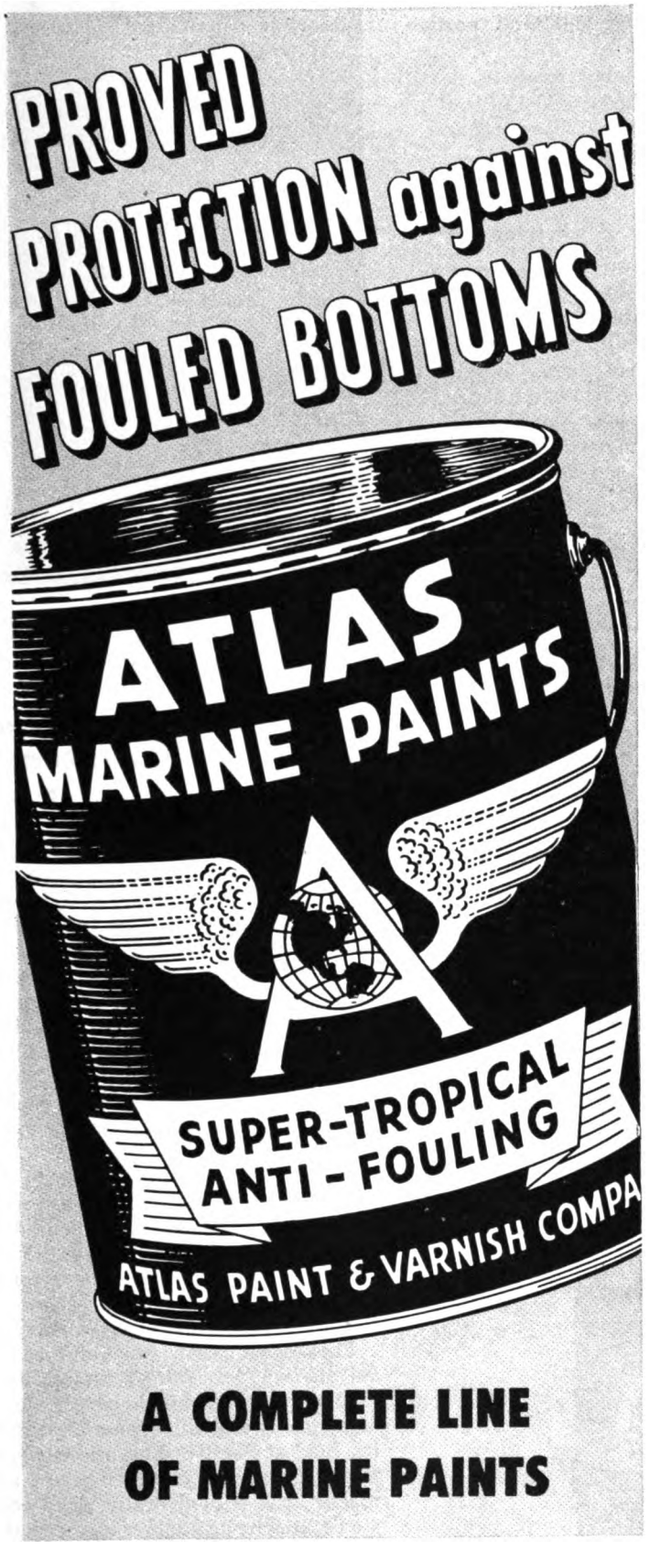


PORT OF NEW YORK AUTHORITY'S new grain gallery at Gowanus Bay. This gallery permits direct loading of ships from the elevator.



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west coast ports. Instead, an order for about 600,000 tons of this type coal has been placed with West Virginian and Pennsylvanian mines for Japan to be shipped through Atlantic ports. Filling of this order alone, could load approximately twenty ships a month from Pacific ports.

He also noted that purchases for the United States Army administration in Japan and for the Philippine government are not made in any western cities but only in New York and Washington, thus lending to cargo movement from Atlantic ports.

In line with Mr. Pennington's campaign, the San Francisco chamber of commerce has issued a series of recommendations designed to stop losses of shipping out of that port.

Local and global approaches were made to the problem. The suggestions are:

1—Increase advertising, promotion and solicitation to meet the competition from Atlantic and Gulf ports for cargoes.
2—Establish stable labor relations.
3—Standardize methods of doing business through Pacific Coast ports and make tariffs uniform.
4—Eliminate conflict of regulatory authority.
5—Adjust methods of charging port costs.

On the global level, the report advises:

1—Support the rehabilitation of Japan, China and the Philippines.
2—Assist the United States Foreign Policy in the rapid restoration of stable governments in the Orient.
3—Constant attention should be given to government policies affecting shipping.

SPEARHEADING A CAMPAIGN . . . MAITLAND S. PENNINGTON, Vice President of Pacific Transport Lines, speaks on "Gateway to the Pacific."

Commission Rules On Docket 655 For Puget Sound Ports

In a 16 page exposition the U. S. Maritime Commission ruled on Docket 655, Terminal Rate Increases—Puget Sound Ports, that definitions of the terms "service charge," "handling," and "loading or unloading" contained in Seattle Terminals Tariff No. 2-C are in violation of section 17 of the Shipping Act, 1916. Respondents are directed to make necessary changes in the definitions, and are told they are expected to supply within three months, the financial results of their operations over a test period for each service for which they publish rates or charges.

Respondents are the parties to Agreement No. 6785, the organic agreement of the Northwest Marine Terminal Association, approved under section 15 of the Shipping Act, 1916. Members consist of 28 operators of public and private owned terminals in Oregon and Washington.

The investigation was initiated as result of the Association's establishment of new increased terminal charges applicable to handling and other charges and hearing held at Seattle. Exceptions were filed to the examiner's proposed report and the matter was argued orally. The commission's conclusions differ somewhat from those recommended by the examiner.

The Alaska Development Board and Territory of Alaska, the United States Smelting, Refining and Mining Company, the Seattle Traffic Association and eight steamship companies are listed as interveners.

Speaking briefly on the subject before the Propeller Club, Port of Seattle, George D. LaRoche general manager, Commission of Public Docks, Portland, and president of the Northwest Marine Terminal Association said the decision is not unsatisfactory to terminal operators.

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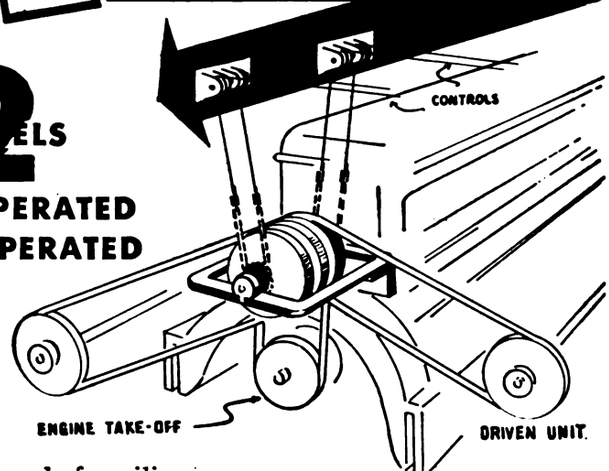

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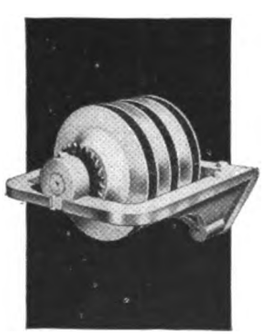

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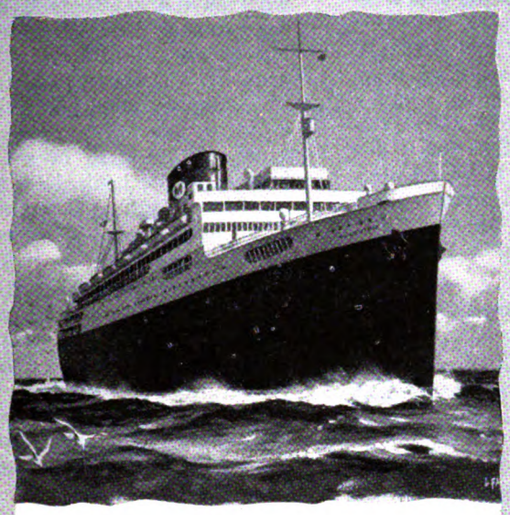

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CARGO DEVICES SHOWN AT LAKE SHORE DEMONSTRATION

Three new postwar cargo handling devices, the Siporter Loader, the Overhead Cargo Handling Gear and a new type A.C. winch, were demonstrated before the nation's top steamship and government maritime officials at Akron, Ohio by the Lake Shore Engineering Company.

These devices, which were shown under actual operating conditions, were part of a cargo handling demonstration sponsored by the company in cooperation with the Maritime Commission. The total attendance at the showing amounted to over 165, including representatives of steamship companies, shipyards, naval architects, port authorities, Navy, Coast Guard, and Maritime Commission.

The "Siporter Loader," which is presently in operation on American President Lines' PRESIDENT CLEVELAND, (see The LOG for January 1948) was demonstrated with modifications over the APL installation intended to improve its efficiency.

The differences between the demonstrated model and the installations on the CLEVELAND and WILSON, are: (1) All equipment is on one deck and is gantry type with rails on deck instead of the overhead boom type with machinery on the deck above as installed on the APL ships. (2) The new design saves the space of machinery room on deck above which amounted to 12 x 25 ft. on the CLEVELAND and WILSON. (3) The new-type Siporter is designed for a hatch width of two pallets plus clearance to permit loading of one pallet while discharging another. (4) The new design can handle 25 to 30 tons per hour.

NEW "SIPORTER LOADER" of the gantry type, improved over the model installed on the PRESIDENT CLEVELAND and the PRESIDENT WILSON, handles 25 to 30 tons per hour through sideports.

Extensible Boom Overhead Gear

The overhead cargo handling gear demonstrated by Lake Shore Engineering Company at Akron was an improvement over the type installed on the experimental ship SEA HAWK. The improvements in the present gear over the SEA HAWK installation were pointed out by Maritime Commission men to be as follows:

(1) On the SEA HAWK the bridge (see cut) moves athwartship while the new design moves fore and aft.

(2) On the SEA HAWK the reach over the side of the ship was obtained by swinging jibs of fixed length. This interfered with sheds. On the new design the bridge can be extended to a maximum of 15 ft. hook reach.

(3) On the SEA HAWK the bridge carried both hooks for a double gang and hence one gang was limited by the speed of the other. On the new type when actually installed aboard ship, there will be two booms each independent of the other, permitting gangs to operate separately.

(4) The new design has a drift over the combing of 14 ft., about two feet more than on the SEA HAWK gear.

(5) With the listing of the ship the SEA HAWK gear was slow. In the new design this has been overcome by changing motor types and controls.

"Magi" A. C. Winch

The "Magi" is an alternating current cargo winch developed by Lake Shore Engineering Company. This winch, according to the company, will do everything a direct current winch will. It has unlimited speed variations making it smoother and faster in "following," whereas the D.C. winch has five speed steps in each direction. For use in mooring or as a capstan the "Magi" winch provides automatic tension on the line. The company claims that the A.C. winch requires less maintenance than other types and in case of shipboard power failure can be hooked up to shore power. The "Magi" A.C. winch is available in all sizes in either keyed or clutched models.

Lake Shore Engineering Company also demonstrated its newest topping winch with worm drive for topping cargo booms, completely eliminating manual handling of the tackle. This affords greater speed and safety in positioning booms, both approaching and leaving port and during load operations, thus greatly reducing cargo handling costs.

Lake Shore Engineering Company's marine equipment is sold by Carswell Marine Associates with offices at 15 Park Row, New York 7, N.Y., 417 Market Street, San Francisco 5, Calif., 726 Jackson Place, Washington 1, D.C., and 2-260 General Motors Building, Detroit, Mich.

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Cargo Handling

(Continued from Page 45)

much contention that a mechanical watertight hatch on the weather deck cannot be kept water-tight due to the working of the vessel depending upon weather and cargo. With reference to this thought that such a hatch cannot be kept watertight, it should not be missed that principal advantage of a mechanical hatch cover lies not in the possibility of making it water-tight but in the speed and ease with which it may be opened and closed and when opened stowed clear of operations. With a mechanical hatch which may be opened in 10 minutes without resetting booms as compared with the usual detention of a half hour, it is believed the addition of a tarpaulin which

REPRESENTATIVES OF MAJOR STEAMSHIP COMPANIES shipyards, and Government agencies were present at Lake Shore Engineering Company's Akron show. Left to right below are: W. H. LEWIS, Marine Department, Lake Shore Engineering Co.; PETER FAY, Assistant General Operating Manager, U. S. Lines; and JAMES F. DEVLIN, Assistant to the Vice President in Charge of Operations, U. S. Lines.

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need only be drawn back prior to opening, taking less than 5 minutes, is all that is necessary to account for the water-tight characteristic.

Mechanical hatches stand to reduce the detentions encountered in opening and closing operation by 50%.

The mechanical hatch cover type which appears to be the most practical is the Mege Hatch as installed on the LOUIS DREYFUS and CIE vessels, the CEPHEE and the FOMALHAUT. The American counterpart of the Mege Hatch is shown in this article and is made by the Seaboard Machinery Corporation in both a type requiring a tarpaulin to make it water-tight and in a water-tight design. Installed the entire cover consists of 4 pontoons hinged together in units of 2 pontoons and then hinged to the end coamings of the hatch.

To operate this type of hatch it may readily be seen that only a single wire pendant, rove through a fairlead block immediately forward or aft on the centerline of the pontoon sections being opened, to which the ship may be hooked is needed. The hatch when the whip is taken up will open like a book, opened in the middle and lying face down on a table, will close when picked up by its back. The standing part of the pendant is of course shackled to the center of the intermediate hinged side of either the most forward or after pontoon whichever the case may be.

The Mege Hatch water-tight feature was provided by the provision of angled plates fastened to the hinged end of the pontoons. These plates were narrow and extended completely across the hatch. One consisted of a knife edge and the other held a rubber gasket for the knife edge to bear into. When closed additional dogged covers were used over these joints in order to prevent water from collecting in them.

Another, and not new although recently much improved, modification in hatch covers has been provided by roller beams.

Hatches using roller beams and boards need not under ordinary circumstances use the cargo gear at all when opening and closing. Boards are simply removed and beams quickly drawn to the ends of the opening. Although the inconvenience of a deck load of hatch beams has been overcome there is still considerable disadvantage in the presence of large stacks of hatch boards with their accompanying unpleasant handling and rehandling. In spite of these and any other disadvantages that may be pointed out roller beams do provide great saving through the reduction of detentions for opening and closing hatches.

It cannot be denied that like all things mechanical both mechanical hatches and roller beams require maintenance and care. But, without maintenance and care winches would not run either. The maintenance of either roller beams or mechanical hatches is not considered an important factor in their practical application when considered with the sav-

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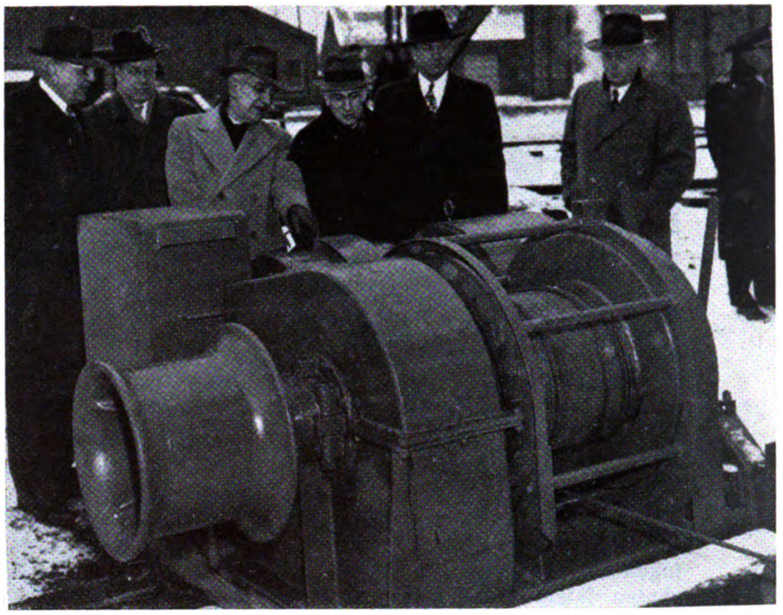

LAKE SHORE'S "MAGI" A.C. WINCH provides flexible control and maneuverability. It reduces space required for contractor panel and resistors of the D.C. winch, saves weight and cost, and requires less servicing.

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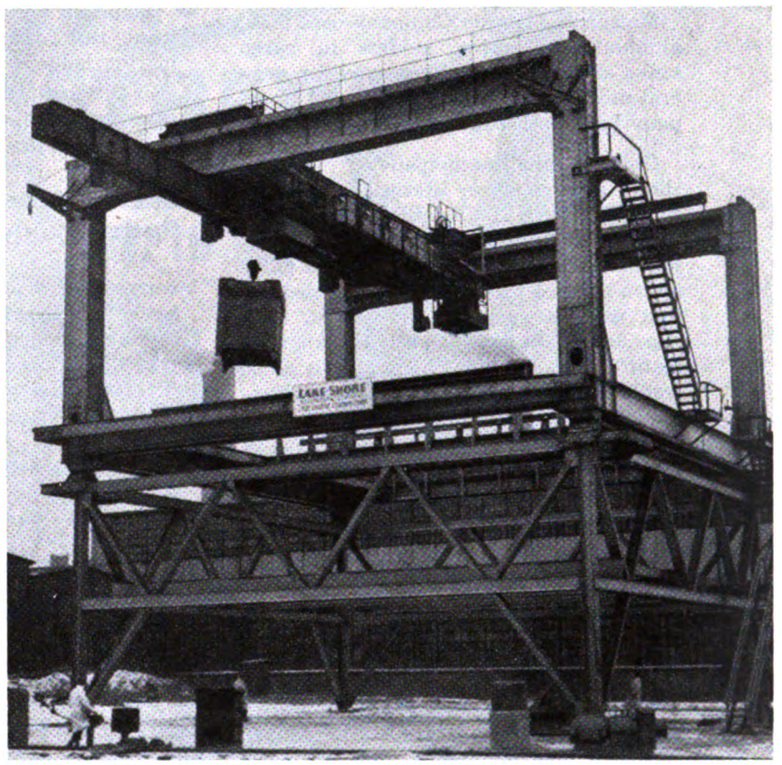

OVERHEAD CARGO GEAR ON THE SEA HAWK was first experiment. Bridge moves athwartship on the SEA HAWK while on the new design the bridge moves fore and aft. The reason for overhead gear is to put lifts at or near point of stowage, reducing handling in the hold.

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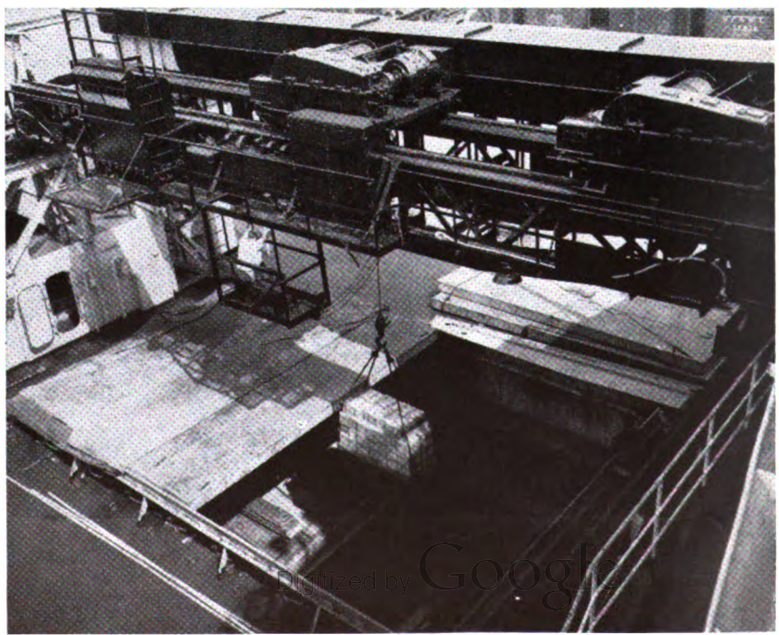

NEW OVERDECK CARGO GEAR by Lake Shore is a refinement of the installation on the SS SEA HAWK. This new gear gives more clear deck space for stowage than conventional gear by eliminating winches, king posts, resistor houses and live rope on deck. Single booms have capacity of 15 tons each and when rigged together can lift 30 tons. Power requirements are the same as conventional gear.

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EQUIPMENTALK

Marine Manufacturers Tell Their Stories . . .

Shipping Firms Purchasing Aluminum Ladders

Aluminum ladders, manufactured by the Aluminum Ladder Company, Worthington, Pennsylvania, have been purchased lately by west coast steamship companies for use aboard ship because of their light weight, strength and ease in handling.

Matson Navigation Company uses these aluminum extension ladders in cargo tanks aboard its freighters, and for general utility work on deck Union Oil Company has purchased aluminum gangways.

One of the accompanying pictures shows a deck officer aboard the Matson ss HAWAIIAN BUILDER atop an extension aluminum ladder doing a quick job of replacing a burned-out light globe above the resistor house. It is pointed out that without such a light-weight, one-man ladder available with its extension feature, such a job as changing this globe would have been done by the time-honored and time-consuming method of droping a bosun's chair, maybe at the cost of expensive stevedoring time, if the light should burn out while cargo is being worked at night. This ladder weighs approximately one pound per foot and sells for $2.00 per foot, plus $7.50 for the attachments.

The other picture shows Captain L. L. Lishman, port captain of the Union Oil Company, walking ashore from one of his company's tankers at Los Angeles harbor on a light-weight aluminum gangway manufactured by the Worthington company.

Standard Oil Company of California is using the Aluminum Company's special marine ladders on their tankers.

J. O. Martin & Company are California sales representatives for the Aluminum Ladder Company.

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Sperry Accelerates Radar Production

According to A. R. Weckel, director of commercial sales for the Sperry Gyroscope Company, Sperry is accelerating its marine production for 1948. "Our district offices on both coasts, the Gulf and the Great Lakes have all forecast sizeable radar commitments for the shipping season ahead," says Mr. Weckel.

He added that despite dollar shortages the Sperry export department is likewise optimistic regarding 1948 prospects. Twenty-four equipments have been sold to foreign operators recently.

In the last four months eight installations have been made on vessels operated by the Alaska Steamship Company, with one more due for installation in Seattle in the near future. On the Ohio River four installations have been completed for the Ashland Oil and Refining Company of Ashland, Kentucky. Many Great Lakes' operators are continuing their extensive program of testing various radar equipments.

Curtis Bay Towing of Baltimore has procured Sperry radar for their tugs GRERLIN and F. F. CLAIN, and Canal Barge Lines of New Orleans for their CODRINGTON and BULL CALF. The ESSO TENNESSEE, being built by Drave for Standard Oil of New Jersey is scheduled for Sperry equipment. Three out of five Sperry radars and Lorans have been delivered to the Pacific Atlantic Steamship Company for the BOISE VICTORY, OREGON, WIDDLESIX VICTORY, CHAS. EDANT and the IDAHO.

Mr. Weckel stated that one of the primary considerations in radar procurement aside from equipment performance, is the ability of the manufacturer to provide prompt and adequate service. Operators want to make certain that they will suffer no delays due to lack of service.

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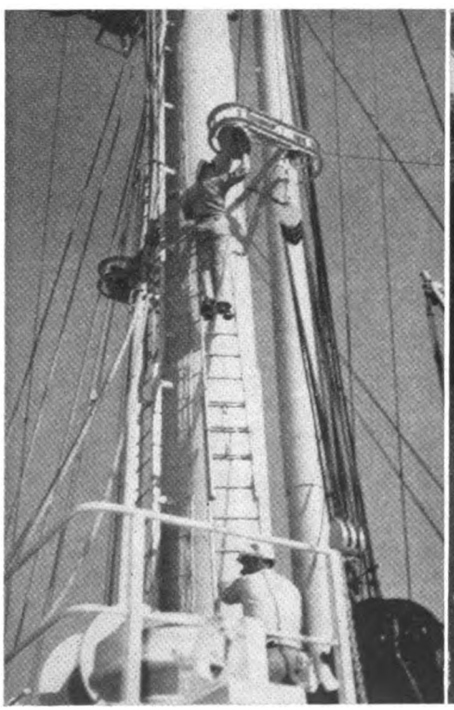
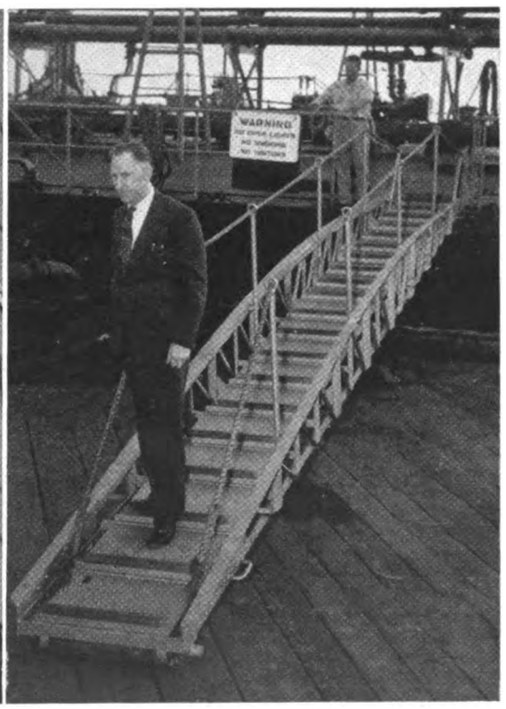
LIGHTWEIGHT ALUMINUM EXTENSION LADDER, left, being used for replacing burned out light globe . . . CAPTAIN L. L. LISHMAN, Union Oil Company port captain, using an Aluminum Ladder Company gangway on one of his firm's tankers.





Nordberg Appoints New Sales Manager

R. W. Bayerlein, vice president of the Heavy Machinery Division, of Nordberg Manufacturing Co., Milwaukee, Wisconsin, has announced the appointment of H. M. Cahill as sales manager of the Small Engine Department.

According to Mr. Bayerlein, Mr. Cahill has had extensive sales engineering experience in the smaller four-cycle Diesel engine field. Prior to joining Nordberg he was assistant to the sales manager of National Supply Co., Springfield, Ohio. He has also been associated with the Buda Company, Harvey, Illinois.

Mr. Cahill will have charge of sales of Nordberg four-cycle 4½", 9", and 13" bore Diesel engines. L. L. Peterson, Sales Manager, Large Engine Dept., is responsible for sales of the 16" bore size four-cycle engine and the larger Nordberg two-cycle Diesel engines. Foreign sales of all Nordberg products is directed by B. T. Eagerton, export sales manager.

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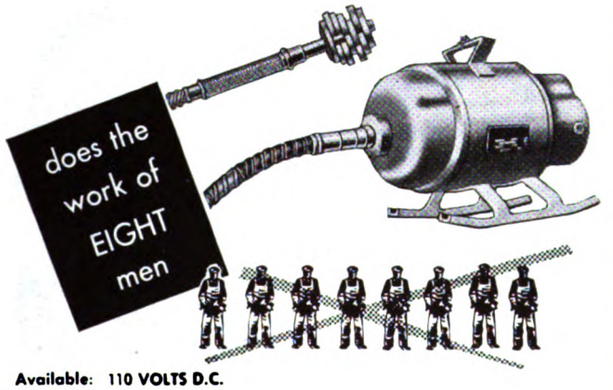

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NEWLY-APPOINTED General Sales Manager for John A. Roebling's Sons Company, Trenton, New Jersey, is E. GEORGE HARTMANN. Hartmann, who brings to his new position over twenty-nine years experience in the wire field, has been associated with the Roebling Company since 1940.

Alcoa Reports 1947 Marine Uses for Aluminum

The Aluminum Company of America, in a review of current uses for aluminum, reported the following applications for the metal in the Marine Industry:

"Aluminum has been used in limited quantities for shipbuilding since 1891, but only since World II has the metal achieved its current wide acceptance by marine architects and builders. During 1947, aluminum was used to an appreciably greater extent than in any previous year in the construction and refitting of passenger and merchant vessels. Newest and most significant applications are found in topside installations for such uses as deck houses, smokestack enclosures, lifeboats, and davits, winches, deck machinery, joiner bulkheads, handrails, ladders and literally hundreds of miscellaneous fittings and accessories on new and reconditioned vessels. The trend toward the increased use and acceptance of aluminum for marine applications during 1947 is exemplified by the following:

"(1) American President Lines' PRESIDENT WILSON and PRESIDENT CLEVELAND. When outfitting is completed, each ship will utilize more than a quarter million pounds of aluminum. Both are equipped with aluminum midship houses, bridges, twin smokestack enclosures, airports and windows, lifeboats and davits, winches and deck fittings. The ultramodern liner PRESIDENT CLEVELAND sailed for Hawaii late in 1947, and the PRESIDENT WILSON is also expected to resume Pacific-Orient service early in 1948.

"(2) Delta Lines' three new vessels, DEL NORTE, DEL SUD, and DEL MAR, built by the Ingalls Shipbuilding Company, Pascagoula, Mississippi. They represent the most revolutionary advance in post-war vessel design. Sizeable weight savings have been realized through the use of approximately eleven tons of structural aluminum in each ship. These combination passenger-freight superliners are among the most modern in the South American trade today.

"(3) Matson Navigation Company's LURLINE. This vessel is presently undergoing extensive reconversion on the West Coast, employing aluminum as one of its chief rebuilding materials. More than 160,000 pounds of aluminum sheet will be used for joiner bulkheads in redesigned passenger accommodations. All of the vessel's new lifeboats and davits, boat winches and fittings are of aluminum construction.

"(4) Alcoa Steamship Company's ALCOA CAVALIER, ALCOA CORSAIR, and ALCOA CLIPPER placed in service this year. Use of aluminum in the building of these vessels has improved their stability and increased their cargo-carrying capacity, and has made them some of the most distinctive of the East Coast Carribean trade. Virtually every known marine application of the metal has been used in these superliners, including lifeboats, davits, boat winches, promenade enclosure windows, doors, interior trim, hatch covers, joiner bulkheads and handrails.

"(5) United Fruit Company has installed aluminum lifeboats in nine of its new vessels. Grace Lines' reconditioned SANTA PAULA and SANTA ROSA, used as troop transports during the war, have been plying South American waters since early this year with aluminum-faced joiner bulkheads in passenger quarters. Twenty ships being added to the Brazilian Lloyd Line will utilize four aluminum lifeboats and davits per ship. Welin Davit & Boat Company, Perth Amboy, New Jersey, has alone produced more than 250 custom aluminum lifeboats and some 125 winches since the war."

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Calculating of Trim & Stability

(Continued from Page 61)

and moments gives the displacement of the ship and the location of the center of gravity as loaded.

Reference to the hydrostatic curves (curves of form) or to the displacement scale on the Capacity Plan will give the mean draft and the moment to change trim one inch. The fore and aft position of the center of buoyancy is obtained from the hydrostatic curves and entered in the form with a plus (+) sign for forward of amidships or minus (−) for aft. To obtain trim (in feet), the fore and aft distance between the center of buoyancy and center of gravity GB is multiplied by displacement and divided by 12 X Moment to Change Trim One Inch. If the signs are watched carefully and LCB subtracted algebraically from LCG (i.e. change sign of LCB and add), the sign of GB will indicate whether it is trim by the head or by the stern. The drafts forward and aft are then obtained by adding or subtracting, as the case may be, one half of the trim to the mean draft. The resulting drafts should be correct if the center of flotation (tipping center) is exactly amidships, but must be considered approximate if it is several feet forward or aft.

After the ship is loaded, it is well to read the drafts carefully and compare to the calculated figures. Any discrepancies may be due to such factors as water density or errors in tank sounding or in calculations. After checking these items any remaining discrepancy probably lies mainly in the weight and distribution of cargo, since this is the biggest item and

(Continued on Page 72)

DE LAVAL STEAM TURBINE COMPANY announces executive promotions . . . left, J. P. STEWART, recently-appointed Manager of the newly combined Commercial and Marine Sales Divisions. Right, W. A. Reynolds, new Manager of the combined IMO Rotary Pump and Worm Gear Divisions.

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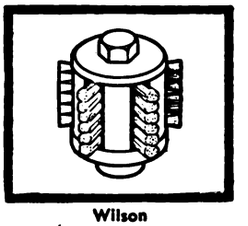
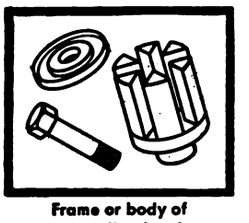
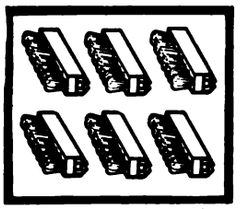


Wilson Expanding Brush



Frame or body of expanding brush



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This longer life results from the expanding section of the brush. Because any brush must be smaller than the I.D. of the deposit it removes, the ordinary sectional brush cleans by vibrating against the inner tube wall with a pounding action which hammers down the brush elements.

In the Wilson Expanding Brush, centrifugal force holds the tufts in constant contact with the deposit — eliminating this destructive pounding. Worn tufts in the Wilson Expanding Brush can be replaced easily and quickly — and at low cost.

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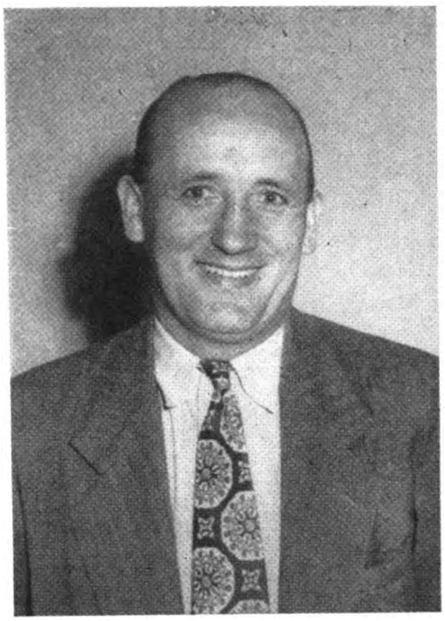


E. P. BUTLER, newly-appointed head of the Gamlen Marine Service, San Francisco.

Gamlen Marine Service in SF Headed by Jack Butler

E. P. (Jack) Butler is the new head of the Gamlen Marine Service, 150 Vermont Street, San Francisco, it is announced by Harry Gamlen, president of Gamlen Service and the Gamlen Chemical Company.

Mr. Butler, well-known in the marine trade circles of northern California, brings to the Gamlen company a background of more than 23 years in the maritime industries. He holds a chief engineer's ticket and formerly was port engineer at San Francisco for Coastwise Line. He is a charter member of The Society of Port Engineers, San Francisco.

In his new post, Mr. Butler will take charge of all chemical operations and processes of Gamlen Chemical, including the cleaning of tanks, boilers, evaporators and all heat exchanger units.

Gamlen Chemical has a completely-equipped research laboratory at San Francisco, where all cleaning problems may be brought for study and prompt handling.

The company has sales and service representatives and facilities in every important seaport from Vancouver, B. C. around the Pacific, Gulf and Atlantic coasts to Montreal, Quebec.

Head of the Gamlen companies is Harry Gamlen, a pioneer of modern chemical cleaning processes. He first established the business some 20 years ago at 61 Fremont Street, San Francisco.

⚓ ⚓ ⚓

West Coast Engine Opens Modern Diesel Service Shop

A truly modern Diesel service shop is a part of the new home of West Coast Engine and Equipment Company at 915 Ashby Avenue, Berkeley, California, making it possible for engines to be overhauled expertly at the lowest cost to the customer.

West Coast Engine Company is the northern California distributor for General Motors Diesels and handles the Nordberg marine gas engines, Willard batteries, propellers Stewart-Warner instruments, control equipment and generator sets.

In laying out its new plant, the West Coast Company had the help and advice of General Motors technicians who came from Detroit to counsel and assist in arranging the sales, parts and service department facilities to the very best advantage. The new location is on an important Eastbay arterial highway and is near the eastern approaches to the San Francisco-Oakland Bay Bridge. Ample parking space for customers is provided.

West Coast Engine and Equipment Company is a young firm which last July took the General Motors engine distributorship. The three heads of the firm, Muirson Wright, general manager; Jim Williams, sales manager, and Gene Rhea, service manager, are all experienced Diesel men and all former General Motors employees.

Sales and service branches are maintained in Eureka, Fort Bragg, San Francisco, Monterey, Santa Cruz and Branscomb.

Candy-by-Radio Service Inaugurated by Radiomarine

As a supplement to the Radiomarine Gift Service, which handles ship-to-shore orders of fruit and flowers, candy-by-radio service to any port of continental United States by Radiomarine Corporation of America through an arrangement with Huyler's and Louis Sherry, Inc., New York confectioners.

When a traveler selects a box of candy, the order is transmitted from the ship through one of Radiomarine's coastal stations directly to the confectioner specified. Overall charges range from $3 to $15, including the cost of two to five-pound boxes of candy, delivery fees, and cost of the message accompanying the candy.

⚓ ⚓ ⚓

Calculating Trim & Stability

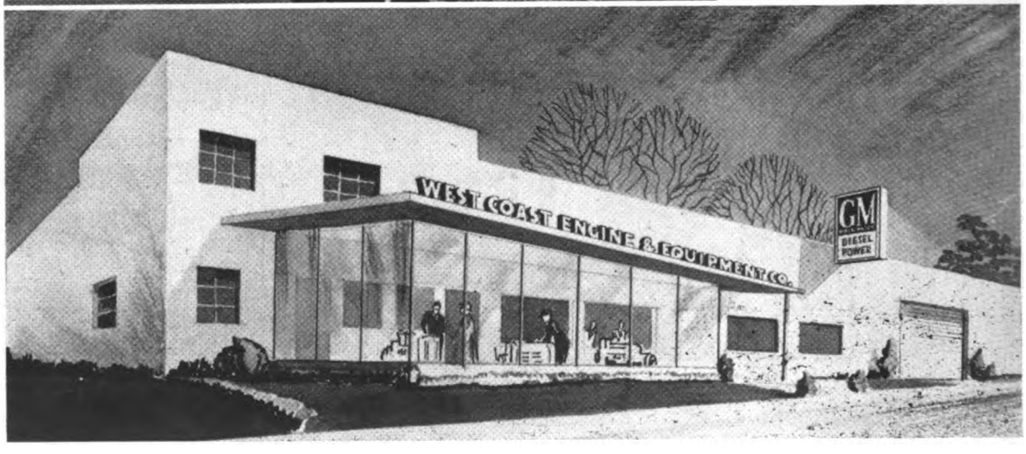
(Continued from Page 70)

one which is difficult to estimate accurately. If no other reason for the discrepancy can be found, the cargo weight and fore and aft position of its center of gravity should be modified in the summary table so as to give the observed drafts.

In determining the stability, i.e. the initial metacentric height or GM, the KM is obtained from the hydrostatic curves. The uncorrected GM is KM−KG, and the free surface correction should be deducted from it. For trim by the stern the trim correction is usually an addition

(Continued on Page 74)

WEST COAST ENGINE & EQUIPMENT COMPANY HEADS top, left to right, GENE RHEA, Service Manager; JIM WILLIAMS, Sales Manager and MUIRSON WRIGHT, General Manager.
Below: DETROIT DIESELS will be sold and served at this new Berkeley, Calif., plant.



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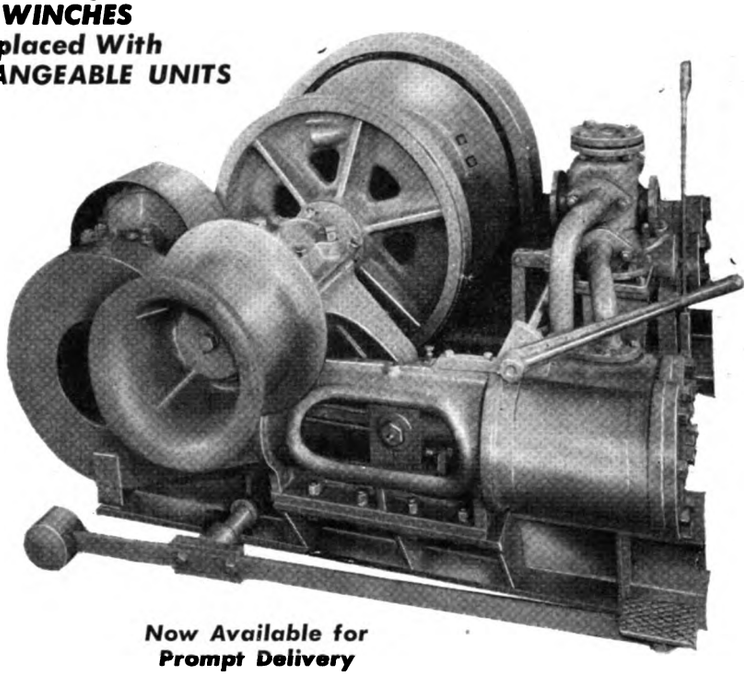

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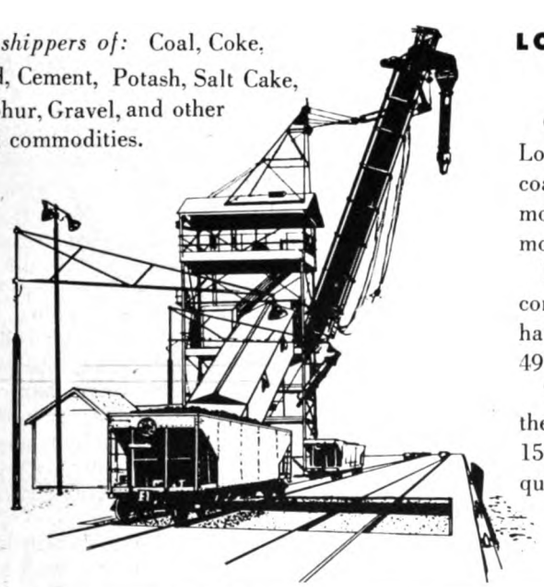

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Mississippi River Race Won by Steam Tug

A Foster-Wheeler three-drum boiler aboard the Federal Barge Lines' steam towboat KAKODA enabled that craft to beat the Diesel-driven towboat HELENA in a race on the Mississippi recently from New Orleans to St. Louis. This was the first contest of its kind on the "Father of Waters" since the packet ROBERT E. LEE beat the NATCHEZ in a storied race back in 1870. It took the KAKODA 11 days, 17 hours and five minutes to make the run and, at the finish, the HELENA was 220 miles in her wake. Both pushed barges.

New Tube Cleaner Catalog Released by Thomas C. Wilson

Thomas C. Wilson, Inc., have released a new catalog of tube cleaners. The new Wilson Catalog No. 76 contains 48 pages, printed in three colors, and is replete with illustrations and tables. It covers the complete Wilson line of tube cleaners for use in refineries, power plants, marine boiler rooms, locomotives, and chemical process plants.

According to the company all listings in the catalog are organized for easy reference, and include application data as well as technical information, operating hints, and other pertinent data.

Copies of Wilson's Tube Cleaner Catalog No. 76 may be obtained by writing to Thomas C. Wilson, Inc., 21-11 44th Ave., Long Island City 1, N. Y.

Calculating Trim & Stability

(Continued from Page 72)

to GM, and therefore if it is neglected the error will be on the safe side. The following table gives typical values for the correction for trim by the stern for a C3 vessel.

Draft	*5' trim*	*10' trim*
20'-0"	+.28	+.63
25'-0"	+.26	+.60
28'-6"	+.23	+.53

The method outlined here for calculating trim may differ from other familiar methods where moments are taken with reference to the center of flotation or "tipping center." For this type of calculation, however, it is believed that the method given is most suitable. In any case, setting up a standard form is certain to be of assistance in performing trim and stability calculations quickly and easily.

Cargo Handling

(Continued from Page 67)

ing they can create.

Further, to the discussion so far on mechanical hatches it is believed that the Mege or Seaboard Machinery Hatch provides each of the following desired characteristics important to weather deck and 'tween deck hatches.

Weather Deck Hatches

(1) *Strength.* Such covers should be able to resist the pounding of heavy seas and carry deck cargo without losing their watertight efficiency through changing shape; or from banging or hitting them with drafts of cargo while loading or discharging.

(2) *Water-Tightness.* Such hatch covers should be designed so that they may be made and kept water-tight with a minimum of attention to care and upkeep even after long hard service.

(3) *Handling.* Such hatch covers should be so designed and installed as to provide a means of quick, simple handling such as a mechanical or electrical hoist, or such as the adaptation of the cargo whip for this purpose.

(4) *Stowage.* When open such hatch covers should be capable of stowage clear of the deck and hatch opening and clear of the winch operator's view. They must also stow clear of the working space needed for any phase of cargo handling.

In modification of the above noted characteristics it is desired to agree that water-tightness remains under discussion if considered with relation to an arrangement such as noted as used in the Mege Hatch rather than with reference to a tarpaulin covered hatch.

Tween Dick Hatches

(1) *Strength* equivalent to that now included in present day tween deck hatch covers.

(2) *Handling.* Tween deck hatch covers should be arranged so as to either provide mechanical handling or so as to reduce the difficulty of handling by the use of covers of the pontoon type or roller beam type.

(3) *Stowage.* When open, such a hatch cover should be capable of stowage clear of the hatch opening without undue labor necessary to drag large units such as pontoon hatches into the wings of the hatch, or to lift them to a stowage upon the weather decks or the pier.

(Continued in April issue of The LOG)

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Propulsion Lubrication

(Continued from Page 53)

sludge deposits, and it is therefore essential that the oil be renewed at reasonable intervals. It is recommended that the engine manufacturers' recommendations for lubricating oil drain periods be maintained as closely as possible. However, in the absence of the engine manufacturers' instructions, the optimum drain periods can best be determined on the basis of oil analyses and condition of the engine.

Reclaiming of Additive Oils

Heavy duty compounded oils cannot be reclaimed as such because there is no adequate reclaiming method that will not remove the compounding materials. Reclaiming methods normally employed consist of heating the oil to drive off water and fuel followed by a clay filtering step which removes carbonaceous materials, color bodies, oxidation products and additives. In some cases, the oil is treated with strong sulfuric acid. These methods of reclaiming allow the recovery of base oil of good quality that approximates the straight mineral oil base from which the compounded oil was originally made. This oil may then be recompounded, but unless done under careful supervision and control, the resultant oil may be of inferior quality.

Optimum Lubricating Oil and Cooling Water Temperatures

The wear rates of Diesel engines are to a large degree a function of the lubricating oil and water jacket temperatures. The lower the lubricating oil and water jacket temperatures, the greater the wear. This is usually caused by the water from the combination gases condensing on the cylinder walls at low temperatures and causing corrosive wear. In the absence of the engine manufacturers' recommendation for fresh water cooled marine engines, the following temperatures are recommended:

	Preferred	*Min.*	*Max.*
Fresh Water	165	140	180
Lubricating Oil	165	140	180

Any operating temperature within the specified range is satisfactory. However, the preferred temperatures are mentioned for guidance as the temperature gradient throughout the engine under these operating conditions is excellent.

It is of particular importance that the engine water jacket temperatures be maintained above the minimum specified temperature of 140°F. in modern high speed engines, as extremely high cylinder wall and piston ring wear will result if the engines are operated too cold. As pointed out above, this is due to the fact that when the engines are operated at a temperature below the dew point of the water in the gases of combustion, the moisture will condense on the cylinder walls, causing cold corrosive wear. It has been noted in some instances that the cylinder and piston ring wear rates of an engine operating at 100°F. may be ten times as great as that of the same engine operating under the same load and speed conditions at 160°F.

The above-mentioned temperatures are for fresh water cooled engines only as it is to be emphasized that for salt water cooling, the overboard discharge temperatures should be below 130°F. to prevent the deposition of solids from salt water.

The Lubrication of Gas Turbines

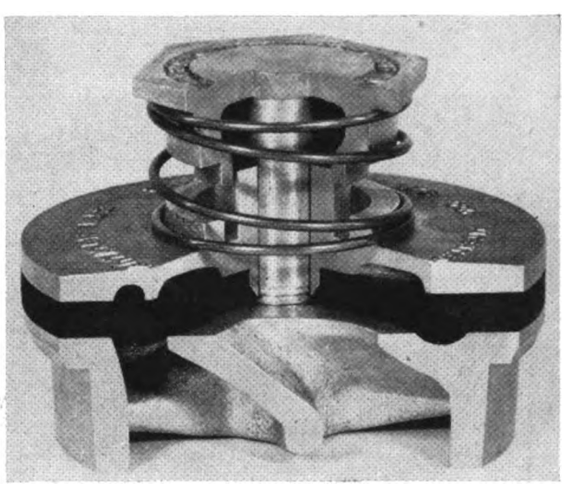
Gas turbines present no particular problems from the standpoint of lubrication at the present time. The journal bearing temperatures usually are no greater than bearing temperatures of high pressure steam turbines and, therefore, they can be satisfactorily lubricated by conventional turbine oils.

Gas turbines of future design will probably operate at higher temperatures and the space and weight limitations aboard ship will require a very compact unit. Thus bearing temperatures will probably be quite high and special lubricants may be required. However, oils are now available which will satisfactorily lubricate at elevated temperatures and gas turbine designers can be assured that when the better oils are required, they will be made available by the oil industry.

‡ ‡ ‡

A Pacific Coast visitor last month was J. D. Bird, vice president and general sales manager, the Dampney Company of America, who was out from his company's factory at Hyde Park, Massachusetts, conferring with C. C. Moore & Company officials. The Moore company handles the Dampney "Apexior" and "Thur-Ma-Lox" products in the west.

SIMS INCLINED PORT ROTATING PUMP VALVES



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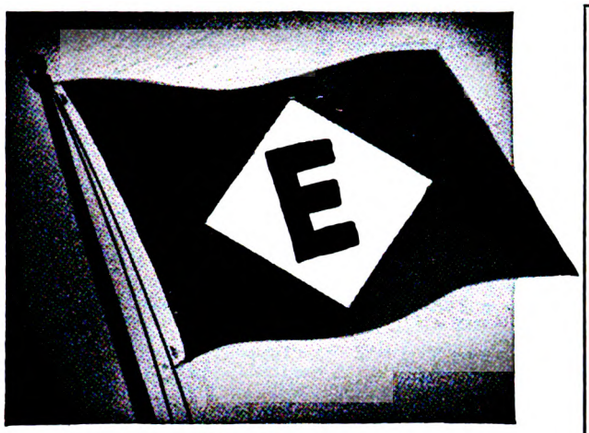

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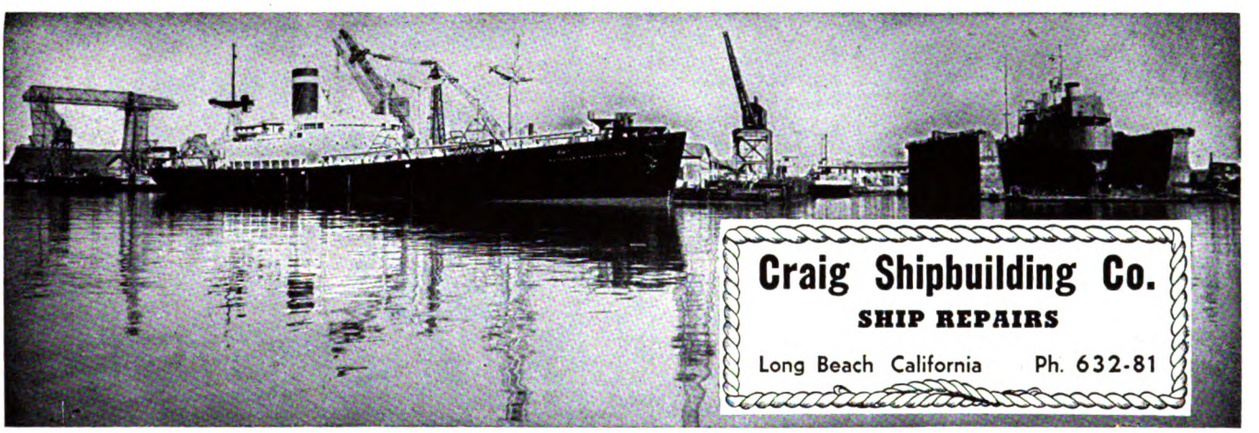

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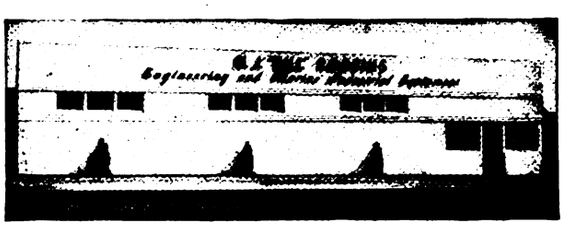

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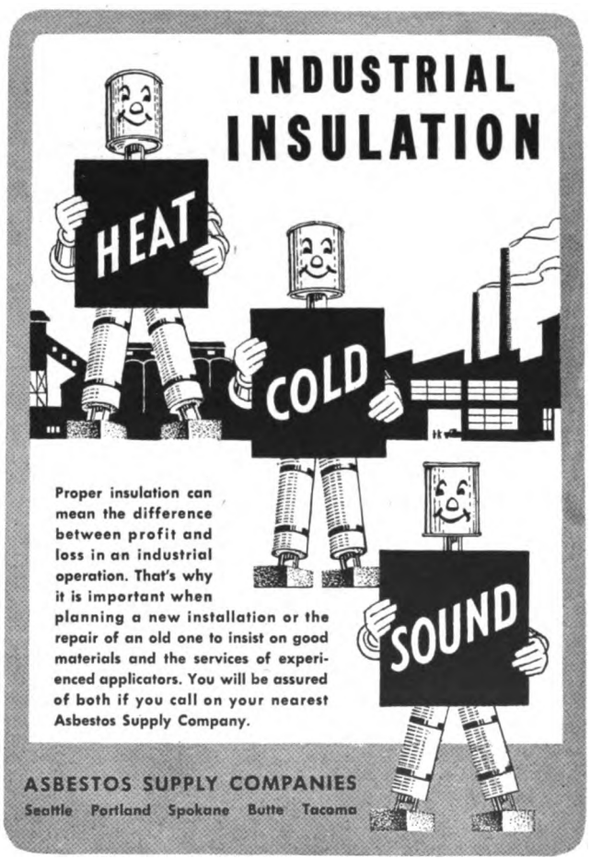

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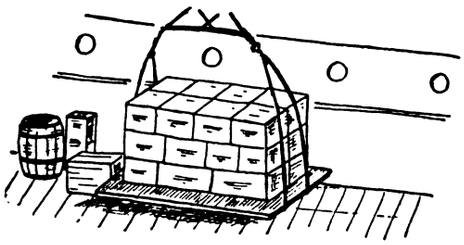

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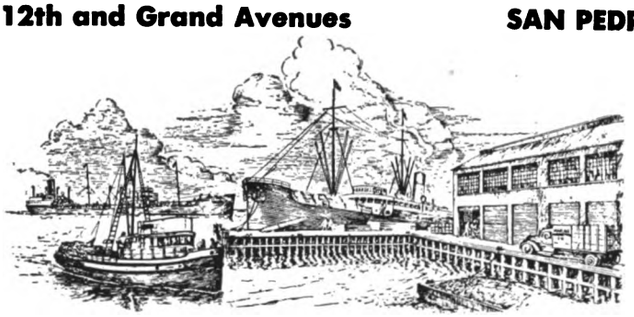

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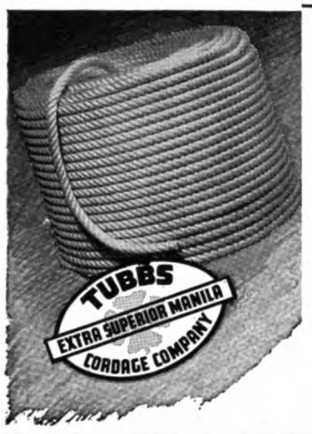

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ADVERTISERS INDEX

Albina Engine & Machine Works 64
Alcoa Steamship Co., Inc. 16
American Brass Company 85
American Export Lines 77
American Mail Line 79
American President Lines 25
Arnessen Electric Company 69
Asbestos Supply Companies 78
Asbestos Supply Company of Oregon 48
Atlas Paint & Varnish Co. 63

Babcock & Wilcox Co. 21
Baier & Associates, L. S. 86
Baker Dock Company 71
Bird-Archer Co. of California 84
Bludworth Marine 69
Brod & McClung 75

Catalina Island Steamship Line 84
Cavanaugh Machine Works 81
Central Maritime Contracting Co. 86
Chesapeake & Ohio Railway Lines 10
Columbia Machine Works 84
Combustion Engineering Co., Inc. 6
Commercial Ship Repair 23
Cordes Bros. 83
Craig Shipbuilding Co. 77

Dearborn Chemical Co. 85
Dee Engineering Co. 83
De Laval Steam Turbine Co., The 84
Dravis Engineering & Machine Works 79
Duke's Packing Co. 84

Ets-Hokin & Galvan 81
Everett Pacific Shipbuilding & Dry Dock Co. 75

Fairbanks, Morse & Co. ..... Inside Back Cover
Frickie, James H. 86
Fuller Company, W. P. 27

General Electric Co. ..... 4 & 5
General Engineering & Dry Dock Co. 81
Gladding, McBean & Co. 71
Gow, Inc., Alexander 83
Griffiths & Sprague Stevedoring Co. 78
Guralnick, Morris 86

Hanson, H. C. 86
Harris Ice Machine Co. 48
Harris, Manly S. 85
Hart & Burns, Inc. 51
Heuck Corp., Ed 51
Hickman Engineering Co. 82
Hiller, Paul W. 71
Hough & Egbert Co. 84

International Nickel Co. 9
Isherwood & Co., Ltd., Sir Joseph W. 85

Liquidometer Corp., The 75
Long Beach, Port of 73
Luce & Company 63
Lykes Bros. Steamship Co., Inc. 78

Marine Electric Co. 80
Marine & Industrial Supply, Inc. 48
Marine Marketing Co. 82
Marine Service, Inc. 85
Maritime Engineering 71
Mitchell Stevedoring Co. 82
Moore & Co., C. C. 21
Moore-McCormack Lines 65
Moran Towing & Transportation Co. 17
Morrison & Bevilockway 83

Nickum & Sons, W. C. 48
Nordberg Manufacturing Co. ..... Front Cover & 3
Norgaard & Clark 86
Northwest Instrument Co. 85
Northwest Marine Iron Works 69
Nystrom, E. W. 86

Oceanic Trading Co. 77
O'Donnell Copper Works, E. M. 71
Oxi Corporation 7

Pacific Chemical Co. 79
Pacific Marine Supply Co. 80
Pacific Salvage Co. 55
Paraffine Companies, Inc., The 59
Pilot Marine Corporation 79
Puget Sound Freight Lines 84

Quaker Pacific Rubber Co. 2

Rail-Water Terminal Co. 19
Refractory Coatings Co. 19
Refrigeration Components 80
Republic Electric Co. 85
Richfield Oil Co. 30
Robbins, W. J. "Bill" 78
Rothschild International Stevedoring Co. 71

Seaboard Machinery Corporation 11
Sea-Ro Packing Co., Inc. 65
Seaside Supply Stores, Inc. 83
Seattle Marine Surveyors 85
Seattle, Port of 55
Sheldon Dunning & Company 48
Sherritt & Headman, Inc. 75
Sherwin-Williams Company 15
Sims Pump & Valve Co., Inc. 78
Socony-Vacuum Oil Co., Inc. ..... Inside Front Cover
Sopac Ship Maintenance Co. 74
Southworth Company, Herb L. 83
Sperry Gyroscope Co. 12
Standard Distributing Co. 59
Standard Oil Co. of California 13
Submarine Signal Co. 18
Sumco Products, Inc. 14
Sweetin Company, J. L. 85
Swett & Company, George E. 82

Texas Company, The ..... Outside Back Cover
Thompson Company, J. Paul 86
Thorpe & Son, Inc., J. T. 85
Todd Shipyards Corporation 29
Toumey Electric & Engineering Co. 80
Tubbs Cordage Co. 83

United Engineering Co., Inc. 1
United Fruit Co. 3

Western Asbestos Co. 77
Western Machinery Corp. 73
Willamette Iron & Steel Co. 47
Wilmington Engineering Service 85
Wilson, Inc., Thomas C. 71
Winter Company, E. V. 81
Woodlawn Flower Shop 83

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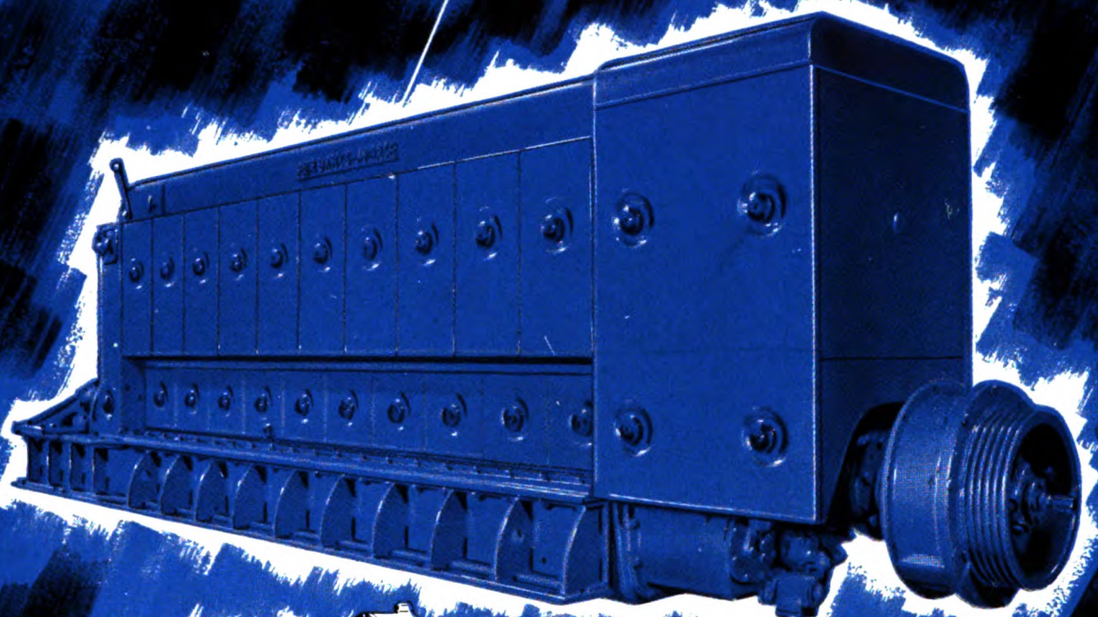

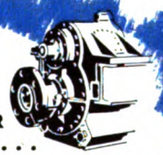

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DIESEL LOCOMOTIVES • DIESEL ENGINES • STOKERS • SCALES • MOTORS • GENERATORS
PUMPS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

COOL RUNNING . . .

Heads, ring sections and skirts of pistons are oil-cooled. Full pressure lubrication to all moving parts.

HORSEPOWER RANGES . . .

From 175 to 480 horsepower —available with all required power auxiliaries.

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ASSURE THIS ECONOMY...

Reduce machinery maintenance costs with Texaco Marine Lubricants.

Photo Courtesy United States Lines

THE best advertisements for Texaco Marine Lubricants are written in operating records. Greater efficiency . . . lower repair and maintenance bills . . . these tell the most convincing story of Texaco quality.

Whatever your propulsion machinery . . . your auxiliaries and other equipment . . . there is a Texaco Marine Lubricant to keep each of them running dependably and economically.

And high quality Texaco Products are always uniform wherever secured . . . available at more than 350 ports in the U. S. and around the world. Let Texaco Marine Engineers at your home port help you in selecting lubricants and make regular service calls on board ship.

☆ ☆ ☆

The Texas Company, *Marine Sales Division,*
929 South Broadway, Los Angeles 15, Calif.

TEXACO

TEXACO Marine Lubricants

TUNE IN . . . TEXACO STAR THEATRE presents the TONY MARTIN SHOW every Wednesday night. • METROPOLITAN OPERA broadcasts every Saturday afternoon.

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THE LOG OF AMERICA'S MARITIME INDUSTRIES

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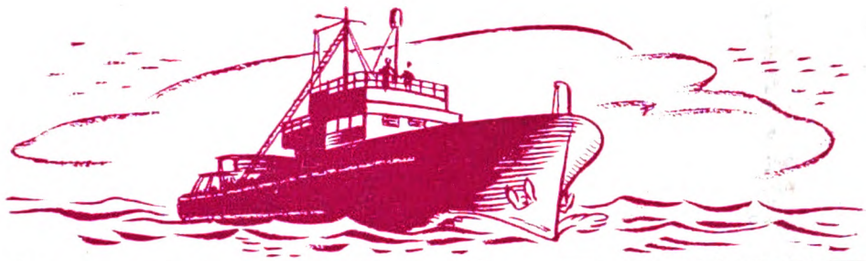
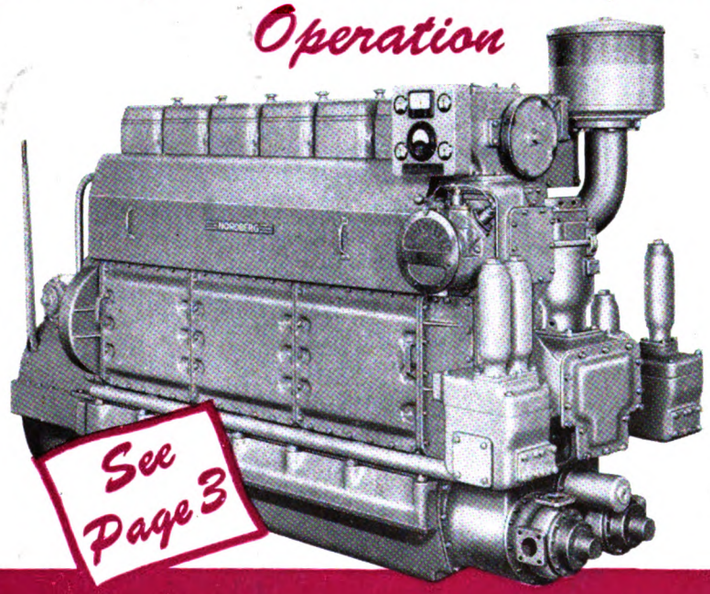
the LOG



NORDBERG POWER

for Dependable and Profitable Operation



See Page 3

NORDBERG

DIESEL ENGINES

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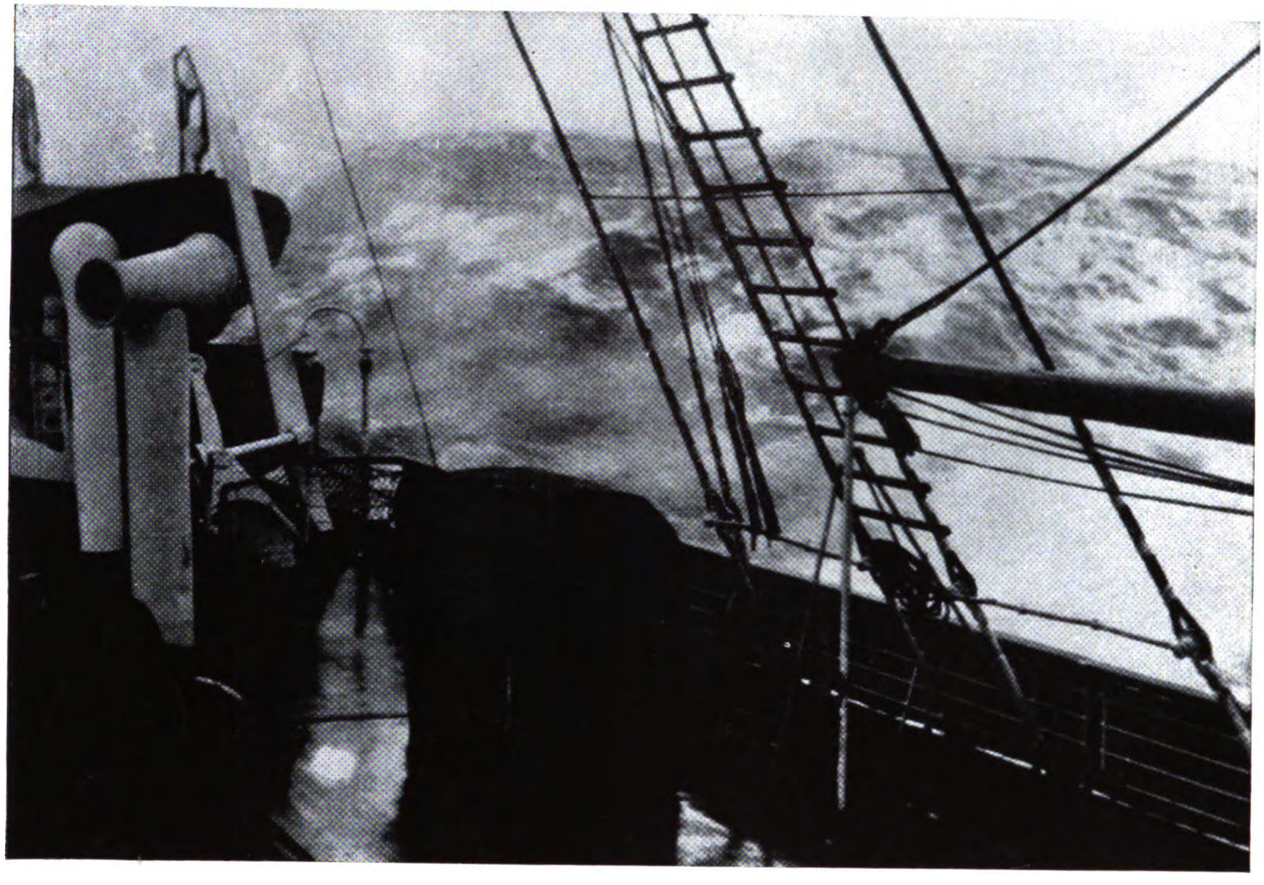
"At Home" on the High Seas



1 Dependable Service

ROUND THE WORLD

AT major ports on the 7 seas, operators of Gargoyle-lubricated ships get "home-port" lubrication service.

The Gargoyle Marine Representative who boards a ship, whether at Melbourne, Montreal or Marseille, is thoroughly familiar with its operating problems, service needs at last port.

And he can furnish *correct lubrication* without costly delay. Specify Gargoyle Marine Oils!

SOCONY-VACUUM OIL COMPANY, INC.
and Affiliates: MAGNOLIA PETROLEUM CO.
GENERAL PETROLEUM CORPORATION

GARGOYLE
Marine Oils

GARGOYLE

MARINE OILS AND ENGINEERING SERVICE

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AMEROID

EVAPORATOR TREATMENT

A Product Designed for the Treatment of Fresh Water Evaporators to Assure Continuous Operation at Maximum Efficiency

1. Completely safe—no acid, no alkali
2. Potable in required dilutions
3. Makes for easy elimination of scale
4. Provides continuous operation of evaporator at rated output
5. Easy and economical to use
6. Reduces foaming (carryover) tendency of evaporators

Engineers NOTE!

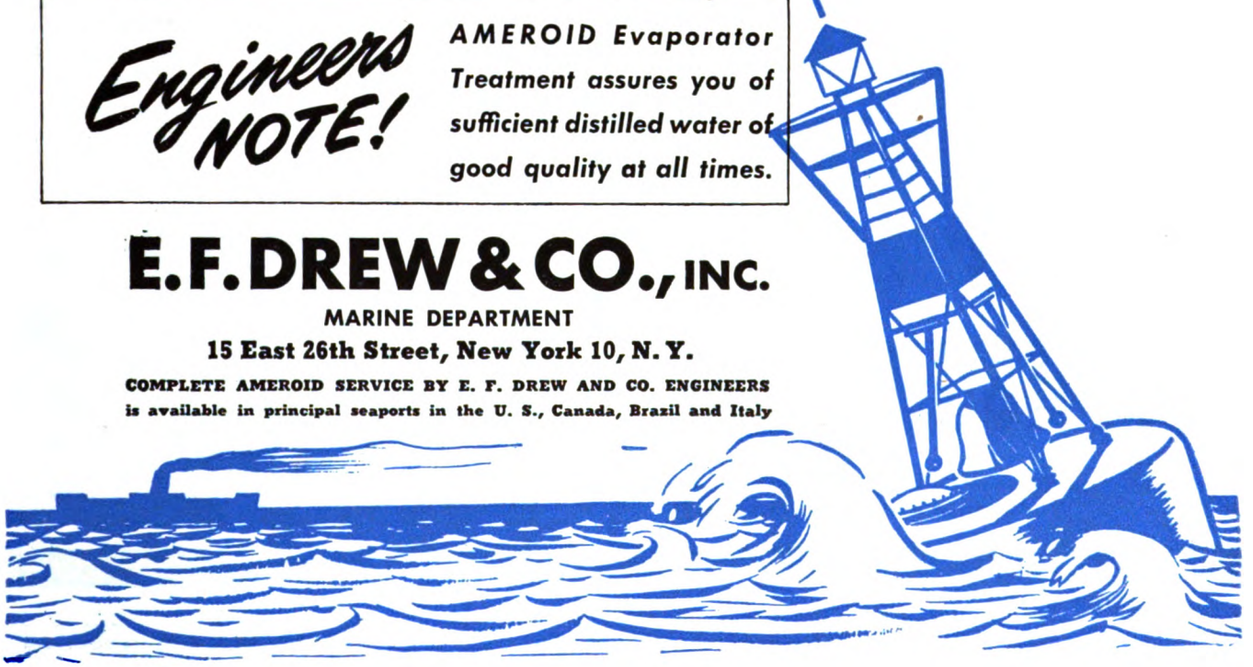
AMEROID Evaporator Treatment assures you of sufficient distilled water of good quality at all times.

E. F. DREW & CO., INC.

MARINE DEPARTMENT

15 East 26th Street, New York 10, N. Y.

COMPLETE AMEROID SERVICE BY E. F. DREW AND CO. ENGINEERS is available in principal seaports in the U. S., Canada, Brazil and Italy



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Men who know these three lights

know Hendry quality and service

Past the San Francisco Lightship, the Los Angeles Harbor Light, and the Point Loma Light at San Diego, go the men who best know C. J. Hendry quality and service. On liner, freighter, tug, yacht, and fishing boat, these men know that their needs can be filled immediately from C. J. Hendry's own warehouses, rigging lofts and sail lofts.

During the past 82 years, C. J. Hendry has literally become factory branches for the nation's leading marine equipment manufacturers. Here you obtain every benefit you can from the factory, plus immediate service, plus the convenience of placing one order with one company for all supplies.

C. J. HENDRY FACILITIES for serving you are illustrated at the right. If all our buildings and warehouses were placed side by side, they would form a town like that shown.

C. J. HENDRY CO.

San Francisco	27 Main Street
San Pedro	111-121 S. Front Street
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SHIPS CHANDLERY • SAIL LOFTS • RIGGING LOFTS • WAREHOUSES • NETS AND FISHING EQUIPMENT • TUGBOAT SUPPLIES • DIVING GEAR

The LOG, published monthly, semi-monthly in July, by MILLER FREEMAN PUBLICATIONS OF CALIFORNIA, 124 West Fourth Street, Los Angeles 13, California, on the 25th of each preceding month. Executive, Advertising and Editorial Offices, 121 Second Street, San Francisco 5, California. Subscription (including Yearbook Number) in United States, $2.00 per year or $5.00 for three years; Foreign $3.00 per year. 25c per copy. Yearbook, $1.00 single copy. Entered as second-class matter February 5, 1946, at the post office Los Angeles, California under act of March 3, 1879. Postmaster: Please send Notice 3S78 to The LOG, 121 Second Street, San Francisco 5.

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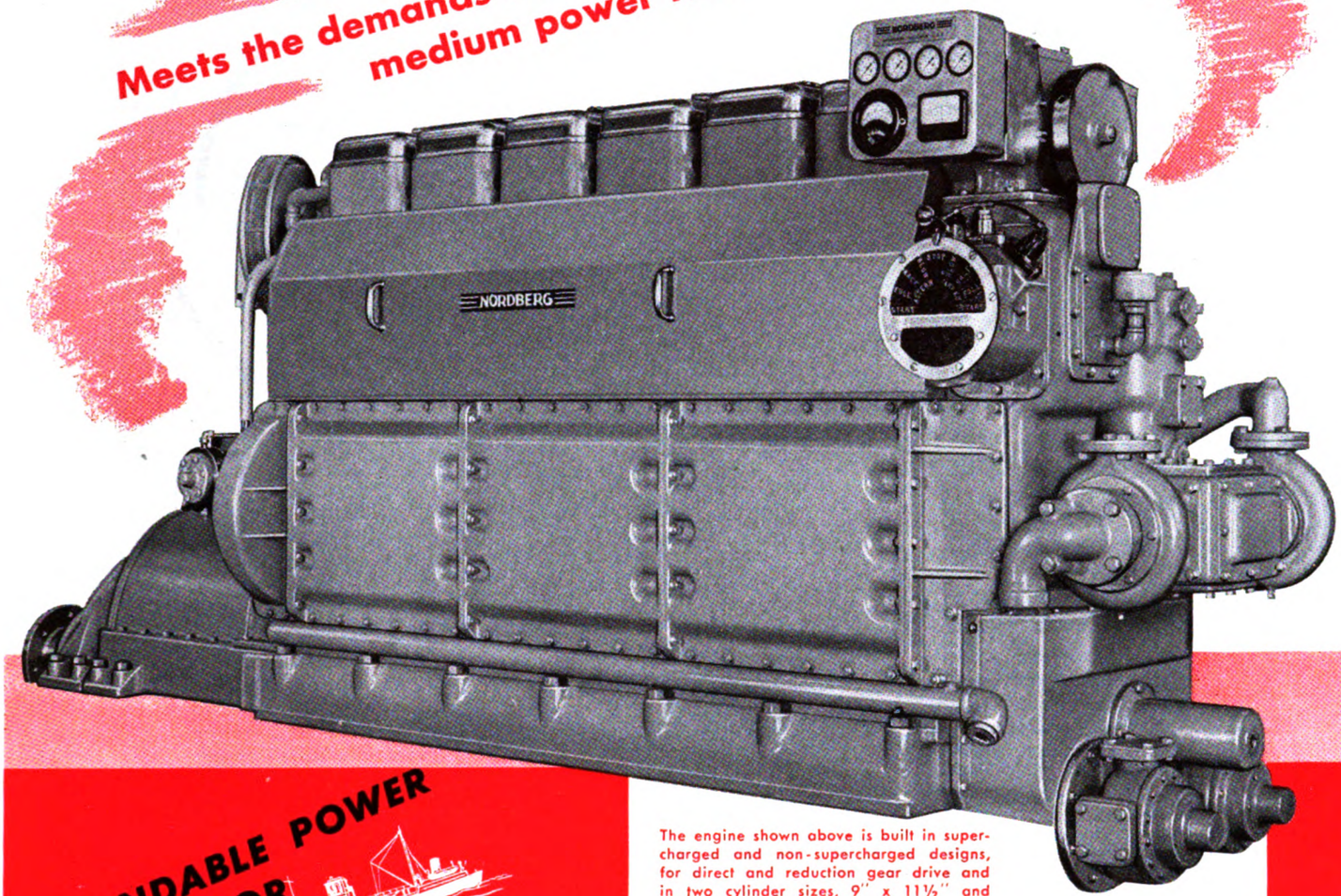
This Heavy Duty Four-Cycle NORDBERG DIESEL

Meets the demands of the medium power field



The engine shown above is built in supercharged and non-supercharged designs, for direct and reduction gear drive and in two cylinder sizes, 9" x 11½" and 13" x 16½", with a capacity range from 265 to 1360 horsepower. Other engine types are available up to 8500 H.P.

DEPENDABLE POWER FOR

EVIDENCE of the position of leadership maintained by Nordberg in the marine Diesel field is the fact that Nordberg supplied more large engines in recent years for American built cargo vessels than all other builders in this country combined. The reputation for better design and construction long associated with Nordberg Diesels is also found in the line of rugged, dependable engines now offered in the small and medium sizes. If you are seeking a quality built engine for a new vessel or a re-engine job, investigate the merits of Nordberg Diesels.

NORDBERG MFG. CO., MILWAUKEE 7, WIS.

A DIVISION OF NORDBERG

NORDBERG DIESEL ENGINES

NORDBERG MACHINERY

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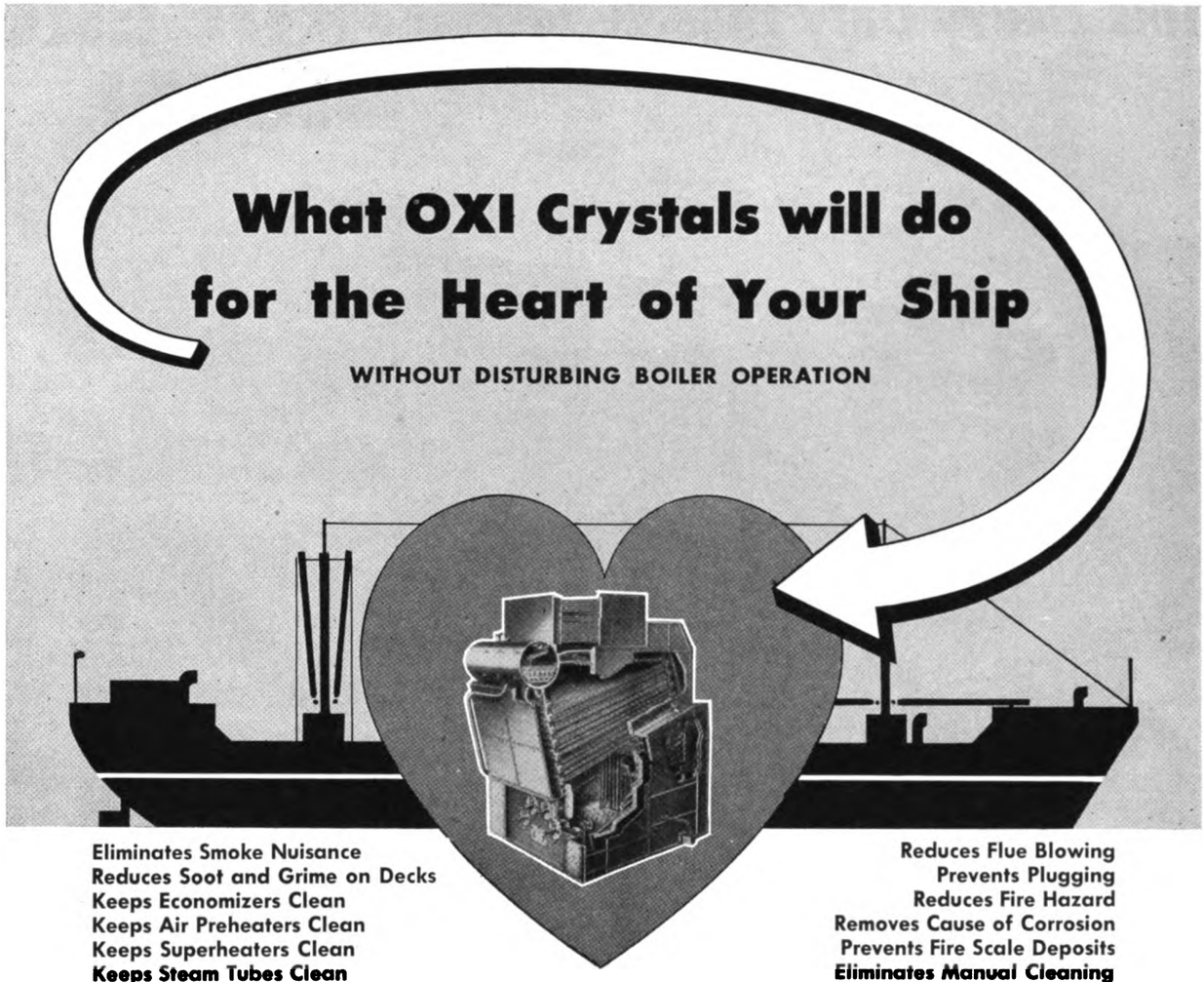
What OXI Crystals will do for the Heart of Your Ship

WITHOUT DISTURBING BOILER OPERATION



Eliminates Smoke Nuisance
Reduces Soot and Grime on Decks
Keeps Economizers Clean
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Keeps Superheaters Clean
Keeps Steam Tubes Clean
Keeps Water Walls Clean

Reduces Flue Blowing
Prevents Plugging
Reduces Fire Hazard
Removes Cause of Corrosion
Prevents Fire Scale Deposits
Eliminates Manual Cleaning
Reduces Fire Scale to Ash

CHEMICALLY CLEANS THE ENTIRE FIRESIDE OF BOILERS

FREE OXI SERVICE

At your request and without cost or obligation, one of our qualified trained engineers will inspect your boilers when in port, and submit to you a written report regarding the results that can be obtained with the Oxi Chemical Process. He will make the initial application and instruct your operating engineers in the most effective method to get maximum results in your boiler. He will then inspect your boilers periodically and submit reports of progress.

Consult an Oxi Field Engineer—now available at major ports—or write our General Office for further information.

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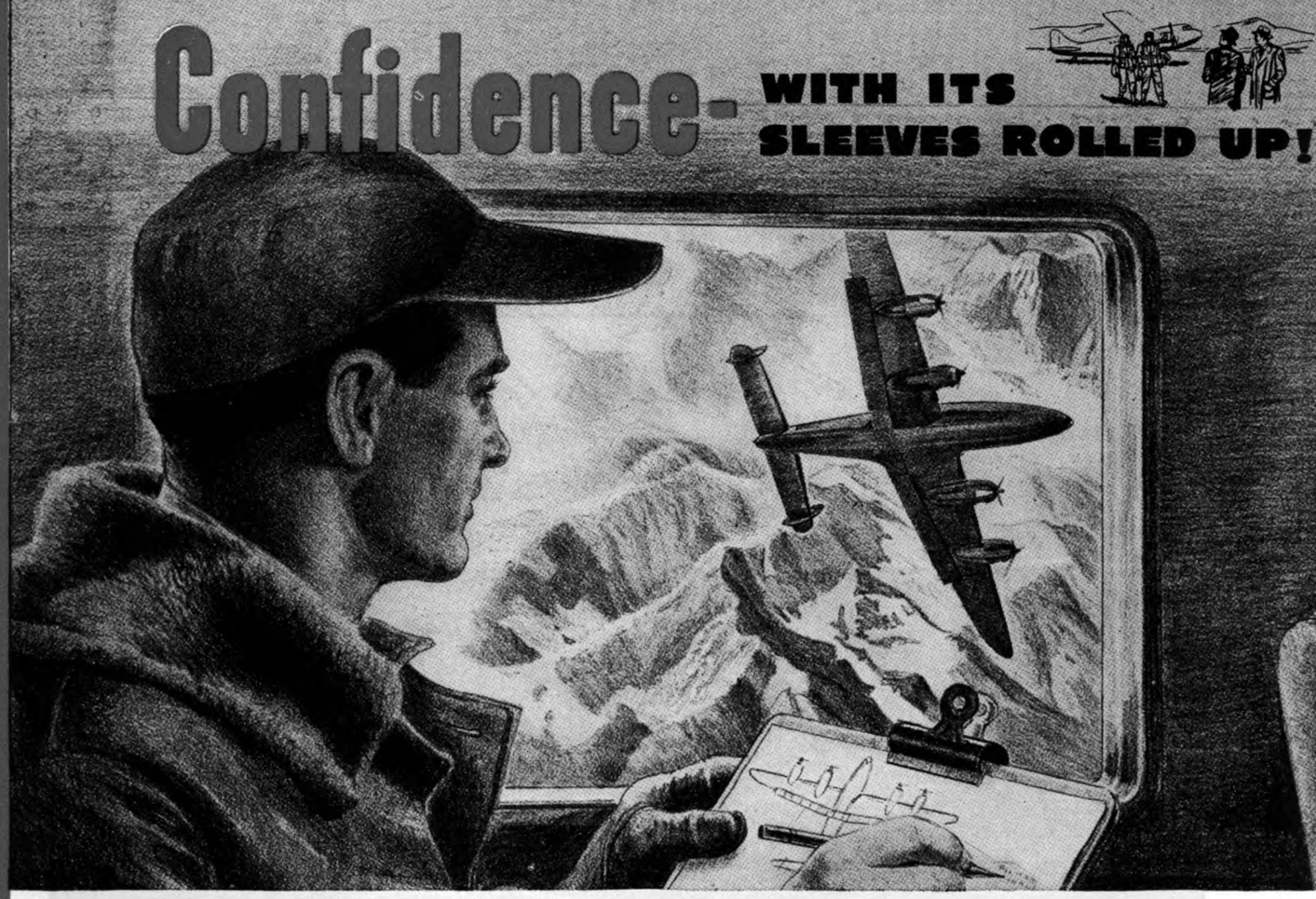
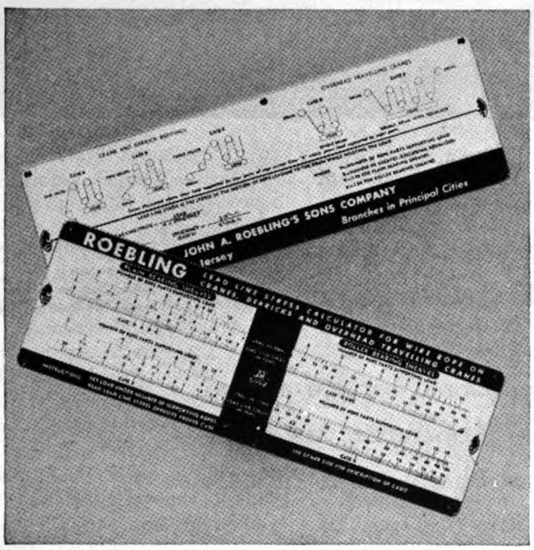
Confidence- WITH ITS SLEEVES ROLLED UP!





YEAR BY YEAR, planes grow bigger . . . faster and safer. Man has unbounded confidence in his ability to build better and better planes. Never satisfied, he experiments and tests tirelessly, and aviation progresses.

With similar vision and confidence, Roebling has been pacemaker in the development and manufacture of products essential to the transportation and other industries. The active, widespread confidence it has won among technical men and operators throughout industry is Roebling's proudest asset. Look to Roebling for continued leadership . . . continual improvement in its products and engineering . . . continual progress.

WHAT SIZE OF ROPE? HERE'S YOUR ANSWER—FREE

DATA used by Roebling engineers themselves are embodied in this unique "slide rule". It's the Roebling Lead Line Stress Calculator for wire rope . . . tells you in a moment the safe and economical size of rope for every load . . . gives the right answer for all types of crane, derrick, and overhead traveling crane installations.

Here's information you can accept and act upon with complete confidence . . . just as you can specify Roebling "Blue Center" Steel Wire Rope for unsurpassed toughness, dependable reserve strength and the reduction of costly replacement shut-downs. Roebling was America's first wire rope maker, and "Blue Center" Steel Wire Rope is the finest that Roebling knows how to make.

Write for a Roebling Lead Line Stress Calculator — it's free. And let your Roebling Field Man tell you about installation and maintenance practices that prolong wire rope life. Call him at your nearest Roebling branch office.

JOHN A. ROEBLING'S SONS COMPANY
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A CENTURY OF CONFIDENCE **ROEBLING**

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★ *WIRE ROPE AND STRAND* ★ *FITTINGS* ★ *SLINGS* ★ *SUSPENSION BRIDGES AND CABLES* ★ *AIRCORD, AIRCORD TERMINALS AND AIR CONTROLS* ★ *AERIAL WIRE ROPE SYSTEMS* ★ *ELECTRICAL WIRE AND CABLE* ★ *SKI LIFTS* ★ *HARD, ANNEALED OR TEMPERED HIGH AND LOW CARBON FINE AND SPECIALTY WIRE, FLAT WIRE, COLD ROLLED STRIP AND COLD ROLLED SPRING STEEL* ★ *SCREEN, HARDWARE AND INDUSTRIAL WIRE CLOTH* ★ *LAWN MOWERS*

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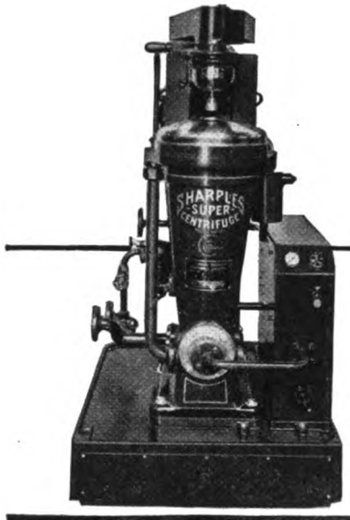

Nothing but the **BEST** *for the "Haida"*

That is why Sharples Oil Purifiers are found aboard America's finest yachts, where exacting performance for long-distance cruising is required.

Sharples Oil Purifiers are delivering exceptional service aboard ships of all types where high efficiency, ease of operation, low maintenance costs and other superior features of Sharples Oil Purifiers have long been recognized.

168-foot luxury Diesel yacht.
Designer: John H. Wells
Builder: Bath Iron Works
Power: Two 1000 hp. Enterprise Diesels

The SHARPLES CORPORATION

SHARPLES

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They took the BUST out of booming

Tugs moving a log raft on the Fraser River, British Columbia, Canada.

In Sandy Fraser Waters, Log Boom Tugs use MONEL Shafts to Stand the Gaff

Booming—the transportation of floating rafts (booms) of logs from forest to mill—is a tough, sweaty, dangerous job. It calls for strong men, rugged boats, and MONEL* to match their toughness and strength.

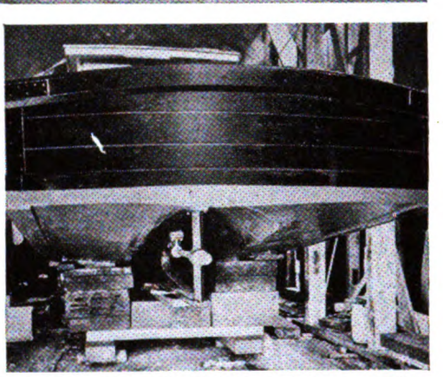
The Silver Skagit Logging Co., of British Columbia, Canada, found that log booming on the Fraser River was unusually hazardous. Constantly shifting gravel bars, shallow water, and floating debris made the 42-mile boom tow a pilot's nightmare. Smashed propellers and sprung shafts were common occurrences.

To take the "bust" out of their booming operations, the Silver Skagit Logging Co. ordered six specially-designed tugs from the A. C. Benson Shipyard, Ltd., of Vancouver, B. C. Designers and builders went to work to produce boomer tugs that were tougher than the Fraser River.

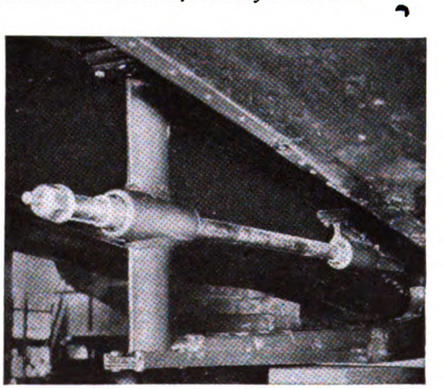
Tunnel-stern design gave these work boats the remarkably shallow draft of only 30 inches. Hull planking was kept extra heavy throughout. And when it came to picking propeller shafts, MONEL was the metal selected, because of its recognized ability to stand up under severe service conditions. This tough, rust-proof, corrosion-resistant INCO Nickel Alloy has the extra stiffness needed to resist shock stresses. And it has the extra hardness to resist the abrasive action of sand in shallow waters.

The designers of these husky boomer boats knew, too, that MONEL propeller shafts have consistently proved their worth in the hardest kinds of service. The examples are many. MONEL propeller shafts lasted more than 15 years in a harbor tug, more than 17 years in a coastal tanker, more than 9 years in a party fisherman plying sandy, shoal waters.

MONEL shafts are available in diameters up to 4 inches, cold drawn and precision straightened. Diameters greater than 4 inches are machined from high tensile forgings. Check with your boatyard today. Prices are lower than you might think, and delivery is prompt!



Tunnel stern construction permits navigating shallow water. Draft is only 30 inches.



The Silver Skagit Logging Co.'s boomer tugs are equipped with 2½ inch diameter Monel shafts to handle the power of their 265 horsepower Cummins Diesel engines.

EMBLEM OF SERVICE INCO TRADE MARK

Monel*

"...It's the SEAGOIN'* metal"

*Reg. U. S. Pat. Off.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

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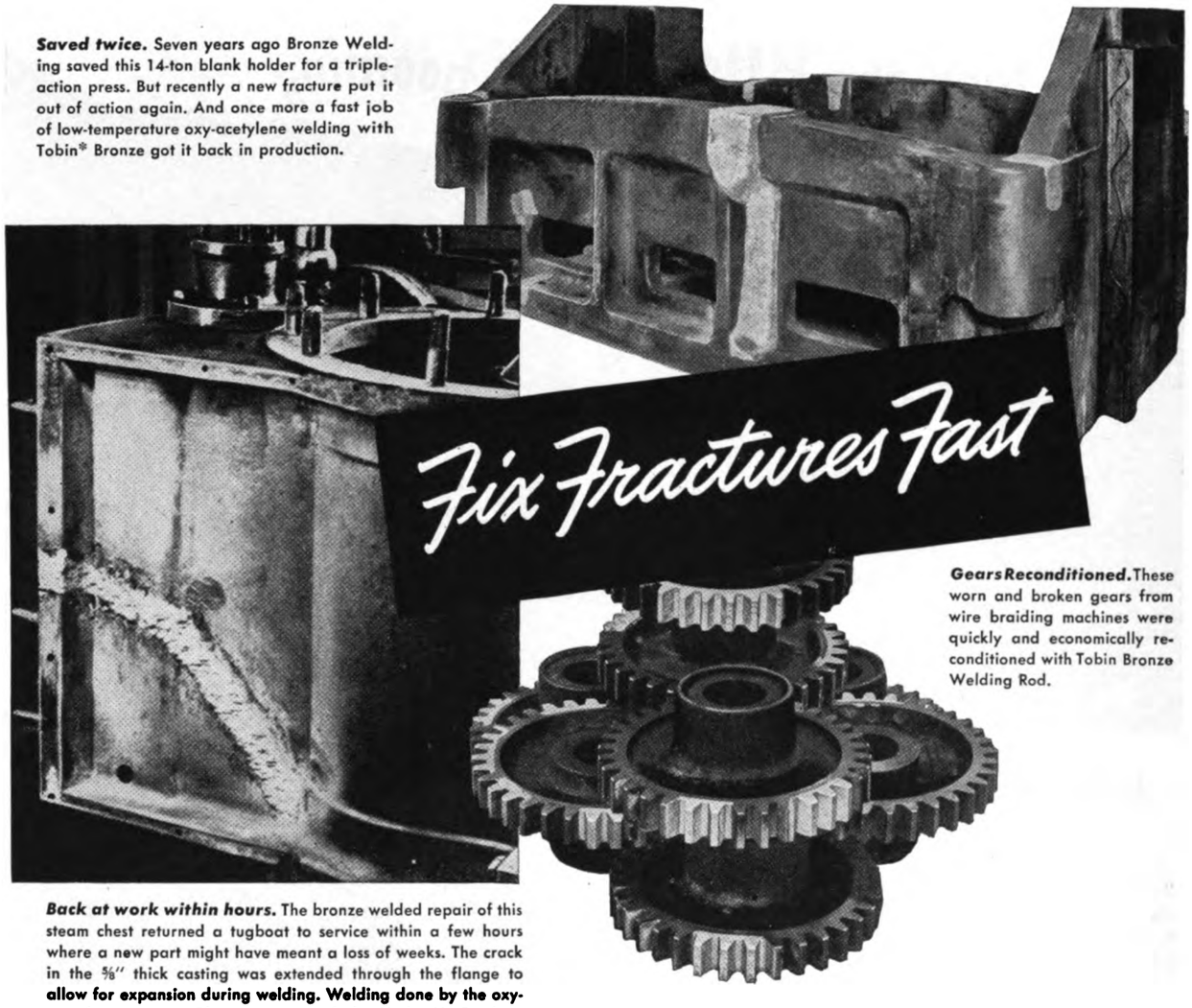

Saved twice. Seven years ago Bronze Welding saved this 14-ton blank holder for a triple-action press. But recently a new fracture put it out of action again. And once more a fast job of low-temperature oxy-acetylene welding with Tobin* Bronze got it back in production.

Gears Reconditioned. These worn and broken gears from wire braiding machines were quickly and economically reconditioned with Tobin Bronze Welding Rod.

Back at work within hours. The bronze welded repair of this steam chest returned a tugboat to service within a few hours where a new part might have meant a loss of weeks. The crack in the ⅝" thick casting was extended through the flange to allow for expansion during welding. Welding done by the oxy-acetylene process. *Photo, courtesy of the Linde Air Products Company.*

...WITH BRONZE WELDING

IT WOULD BE HARD to estimate the time and money saved by ship-owners through the quick repair of broken or worn equipment by Bronze Welding. Regardless of the type of metal involved—cast iron, steel, malleable iron, or copper alloy—bronze welding at low temperatures can repair the fracture or build up the worn surface almost like new in a fraction of the time needed for new parts . . . and at low cost, too. For information on all Anaconda Welding Rods, their fields of application and suggested welding procedures, write for your copy of Publication B-13. 48182

*Reg. U. S. Pat. Off.

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Anaconda
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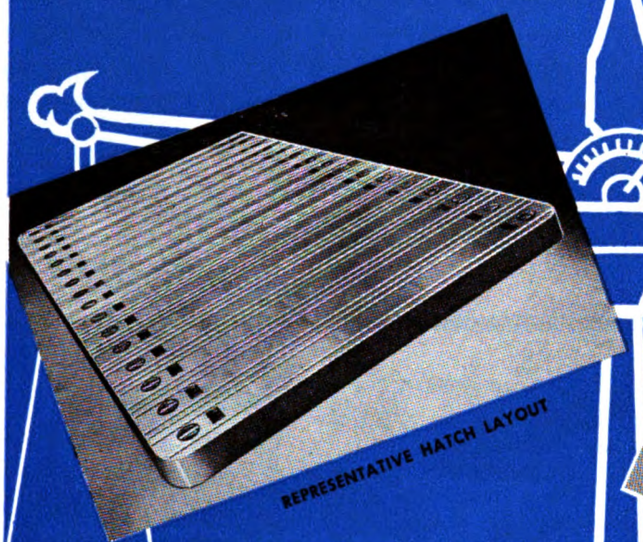
BALANCE
Costs with Safety.....

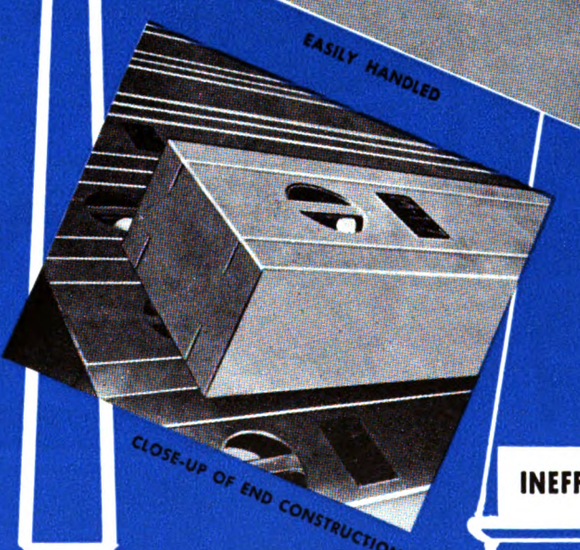
with the LIGHT

SEABOARD ALUMINUM HATCHCOVERS



REPRESENTATIVE HATCH LAYOUT

EASILY HANDLED



CLOSE-UP OF END CONSTRUCTION

Aluminum Hatch Covers save because they save time. They handle with a minimum of effort and afford a maximum of strength and durability. Save time spent replacing and handling outmoded covers. Also provide greater safety (lighter boards and fewer beams). Make hatch operation speedier . . . up to date.

INEFFICIENCY

SEABOARD MACHINERY CORP.
29 BROADWAY
NEW YORK 6, NEW YORK

PACIFIC COAST REPRESENTATIVE:
CONSOLIDATED SERVICES, INC.
71 Columbia Street, Seattle, Wash.

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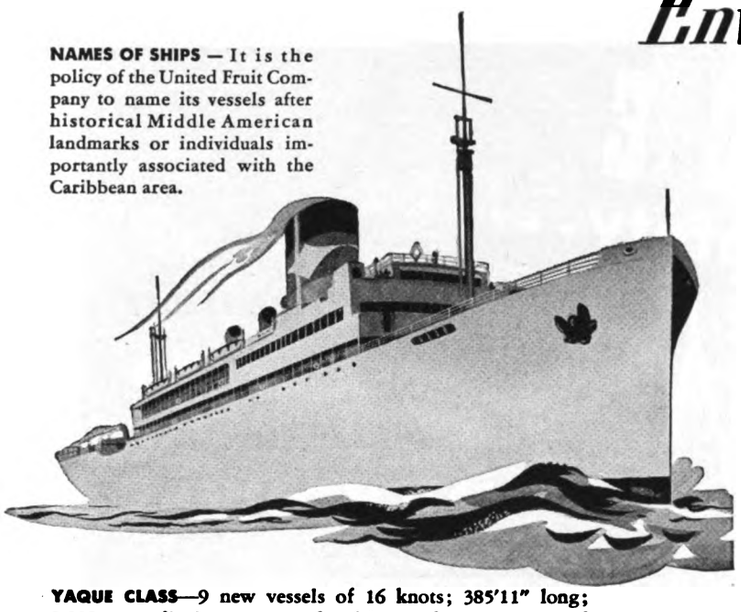
Envoys of Mutual Enterprise

NAMES OF SHIPS — It is the policy of the United Fruit Company to name its vessels after historical Middle American landmarks or individuals importantly associated with the Caribbean area.



These are the American Flag vessels which spearhead the United Fruit Company's Great White Fleet in the Middle American Trade. Eighteen are fast, fully refrigerated cargo vessels, new as tomorrow's mail. Six are handsomely reconditioned cargo-passenger liners of established Caribbean cruise distinction. These twenty-four vessels become envoys of mutual enterprise between the Americas—tangible expression of one Company's interpretation of the Good Neighbor Policy.

YAQUE CLASS—9 new vessels of 16 knots; 385'11" long; 9,338 tons displacement; and refrigerated cargo space of approx. 197,000 cubic feet. Accommodations for 12 passengers.

FRA BERLANGA CLASS—9 new 18.5 knot twin screw ships... 455'5" long, with 12,890 tons displacement, and refrigerated cargo capacity of approx. 318,000 cubic feet. Accommodations for 12 passengers.

TALAMANCA CLASS — 6 completely reconditioned passenger-cargo luxury liners, offering first class accommodations for 95 passengers. All rooms face the sea. Permanent outdoor pools, spacious promenades and public rooms, sound movies.

GREAT WHITE FLEET

UNITED FRUIT COMPANY

General Offices: 1 Federal Street, Boston 10

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THE *Original* DUAL FUEL OIL TREATMENT

L·S·O
TRADE MARK

Liquid SOOTOUT

T. M. REG. U. S. PAT. OFF.

CONSTANT *Cleaning Action* FROM TANK TO STACK

MORE and more steamship companies are adopting the use of Liquid SOOTOUT. This popularity is due to its outstanding results.

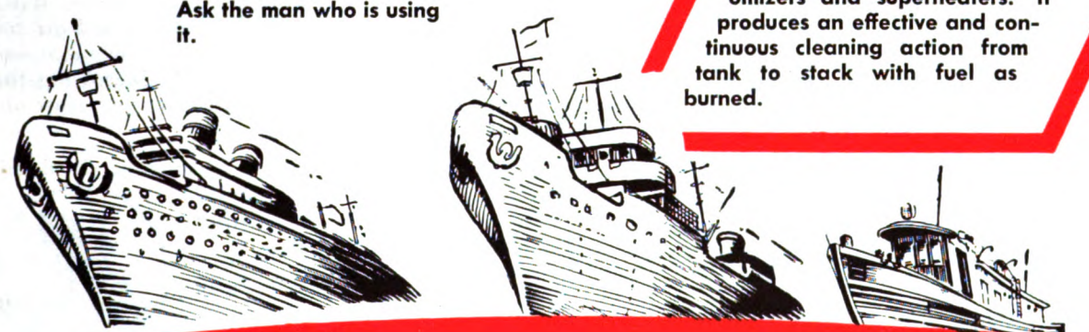
Along the waterfront and in the main offices, chiefs, port engineers as well as main office executives, are hearing the name Liquid SOOTOUT— L-S-O; its top performance is making it a topic of conversation.

Liquid SOOTOUT—L-S-O, is the successor to the old-type powder fuel oil treatments and sludge solvents. Liquid SOOTOUT is different as it provides DOUBLE CLEANING ACTION FROM TANK TO STACK, with less cost and less labor.

Ask the man who is using it.

FOR TANK—Liquid SOOTOUT is a concentrated chemical liquid which, when applied to fuel oil in proper proportions, disperses condensation, also sludge forming elements, and reduces strainer, preheater, and nozzle maintenance.

FOR FIRESIDE—Liquid SOOTOUT removes carbon scale and slag in combustion areas, economizers and superheaters. It produces an effective and continuous cleaning action from tank to stack with fuel as burned.



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Boston, Massachusetts	Wiggin Terminals, Inc.
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Brownsville, Texas	Coast Iron & Machine Works
Corpus Christi, Texas	Coast Iron & Machine Works
Galveston, Texas	Galveston Survey Agency
Houston, Texas	Universal Terminal Warehouse Co.
Jacksonville, Florida	Peninsula Warehouse Co.
Los Angeles, California	J. A. Clark Warehouse Co.
New Orleans, Louisiana	Douglas Public Service Corp.
Norfolk, Virginia	Southgate Storage Co.
Philadelphia, Pa.	Terminal Warehouse Co.
San Francisco, Calif.	San Francisco Warehouse Co.
Seattle, Washington	Eyres Transfer & Warehouse Co.
Wilmington, Calif.	Wilmington Engineering Service Co.

LUBAID CO., Milwaukee 1, Wisconsin

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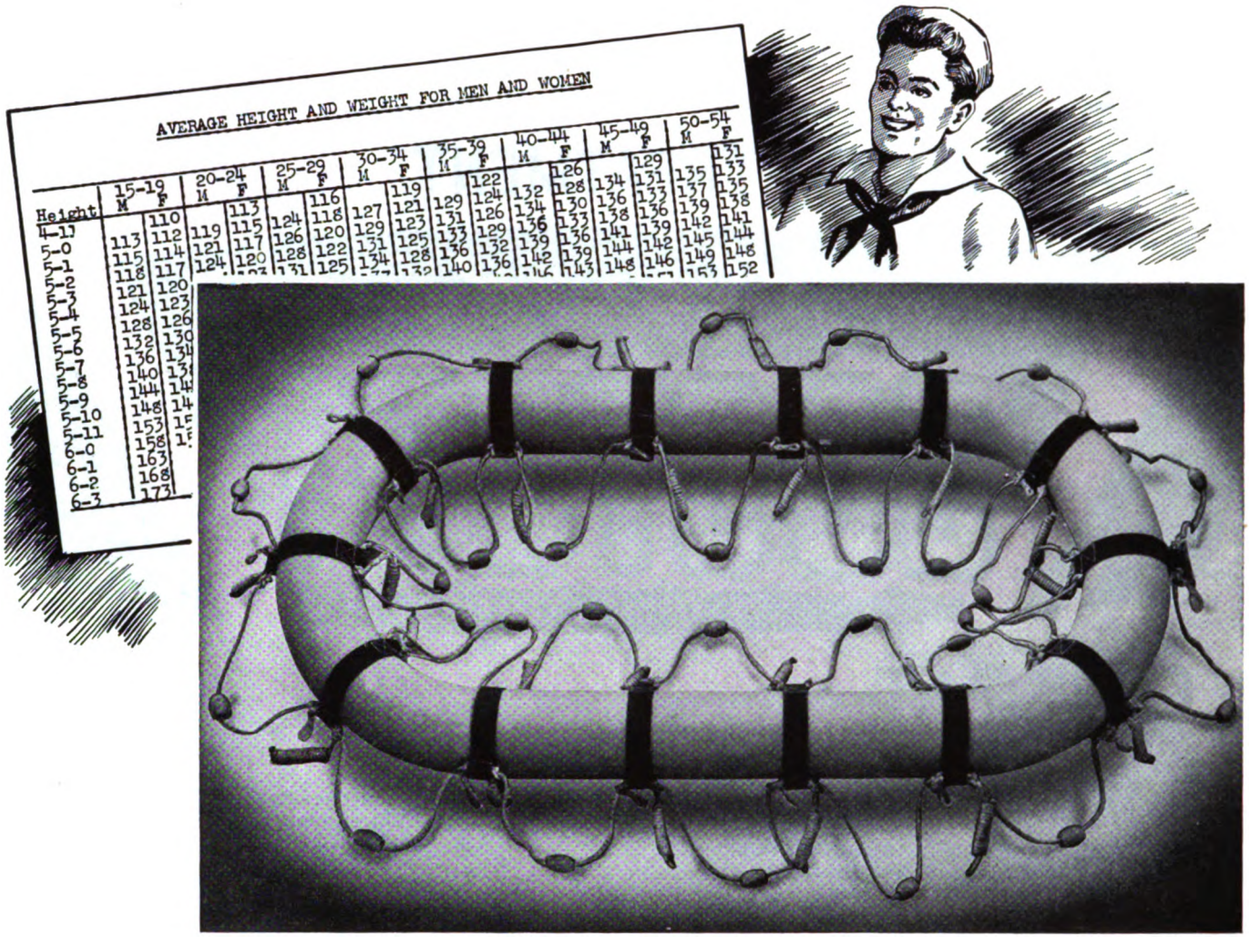

the Float — THAT NEVER GROWS OLD!

Wooden floats for sea going passenger ships have the same problem as humans. They tend to get *over* weight as they grow old. The high cost of maintenance makes their up-keep costly after only a few years exposure to the weather.

The new all-aluminum Welin float *never* grows old. It *never* gets any heavier than it was on the day it was made. A twenty-four person all-aluminum float weighs only 118 lbs. and it will not gain one ounce throughout its life except for the weight of paint. Aluminum does not *absorb* paint or moisture. It is corrosion resistant and there is no possibility of dry rot.

Heliarc welding permits the floats to far exceed any other, for strength and durability.

All aluminum floats are ideal for passenger vessels. The average man can easily handle its 118 lbs. Balsa wood floats with the same capacity weigh *at least* 200 lbs. when they are new. The application of paint and absorption by wood keeps constantly increasing the weight of balsa wood floats so that as they grow old they keep losing in efficiency.

Look into the no-maintenance features of all aluminum floats when lifesaving equipment is being specified for existing vessels or new construction.

Welin Aluminum Floats are Fully Approved and Tested by the U. S. Coast Guard.

TRAVEL AND SHIP BY AMERICAN VESSELS

Welin DAVIT AND BOAT

DIVISION OF AMERICAN STEEL AND COPPER INDUSTRIES, INC.

PERTH AMBOY, NEW JERSEY • SAN FRANCISCO, CALIFORNIA

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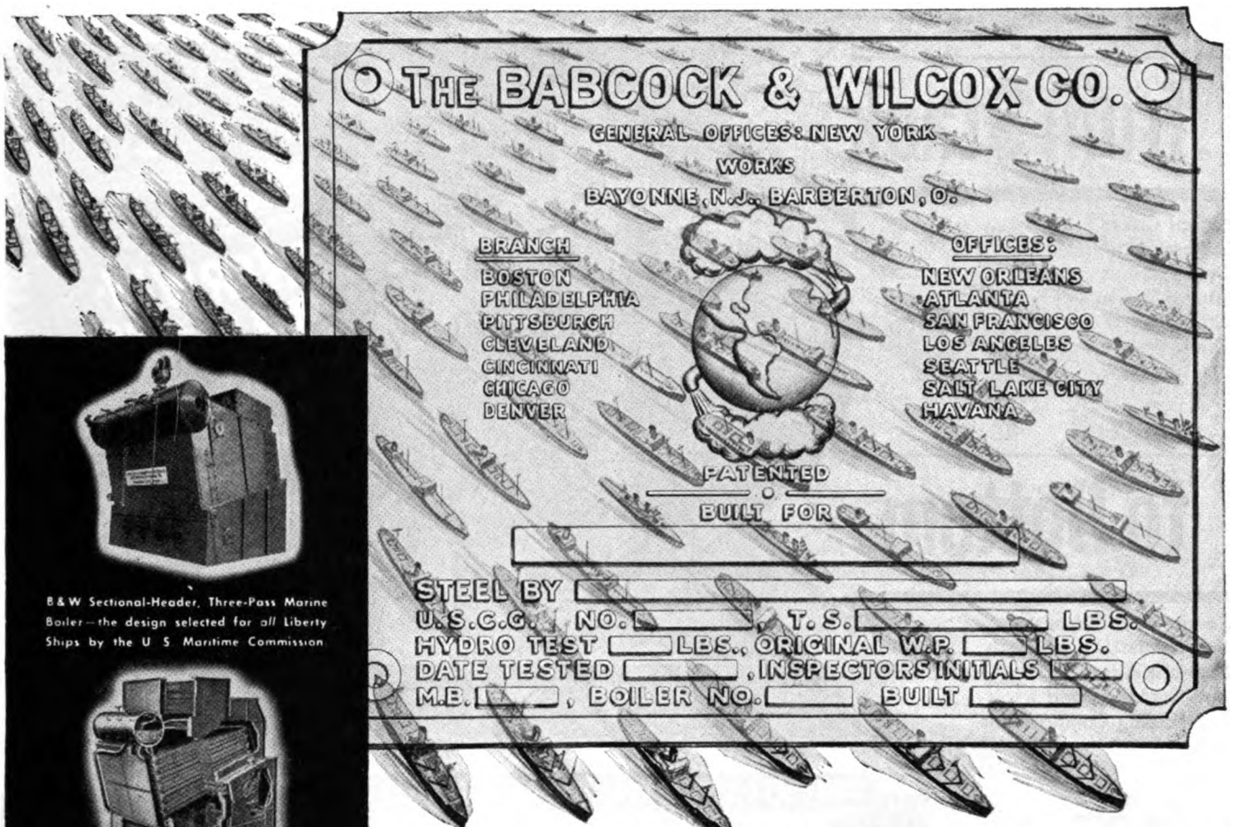
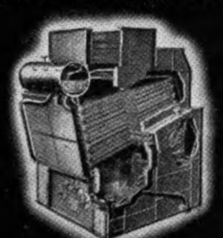


B&W Sectional-Header, Three-Pass Marine Boiler—the design selected for *all* Liberty Ships by the U. S. Maritime Commission



Victory Ship boilers are of the Single-Pass, Sectional-Header Type—a design originated and introduced by B&W

A high percentage of U. S. fighting ships are equipped with B&W boilers similar to the type shown above

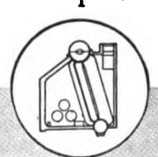
M-232

THE INVISIBLE NAMEPLATE ON THOUSANDS OF SHIPS...

THE distinctive B&W nameplate stands out in bold relief on the boilers in thousands of the ships that make up America's merchant and naval fleets. For vessels of every class — among them the S. S. America, the latest ships of the Great White Fleet, the highly efficient T2-SE-A1 tankers, the Delta Luxury Liners—naval architects, ship owners and operators have selected B&W boilers which can be counted on for distinctive service.

Hundreds of other ships carry boilers that also bear—though *invisibly*—the imprint of B&W pioneering leadership and progressive engineering in marine boilers. For example, during World War II, B&W supplied other boiler manufacturers with complete detailed working drawings and bills of material so that they might also build *B&W* boilers, and in this manner, speed the war effort.

With 70 years of service in the marine industry, B&W can always be called upon to design and build distinctive boilers to meet the exacting requirements of merchant and naval vessels of all classes and sizes.



BOILERS FOR ALL TYPES OF SHIPS

★ ★ ★

OTHER B&W PRODUCTS — Seamless & Welded Tubes for All Pressure and Mechanical Applications . . . Refractories . . . Alloy Castings . . . Oil Burners . . . Chain-Grate Stokers . . . Stationary Boilers and Component Equipment . . . Chemical Recovery Units . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
GENERAL OFFICES: 85 LIBERTY ST., NEW YORK 6, N.Y.
WORKS: ALLIANCE AND BARBERTON, O.; AUGUSTA, GA.

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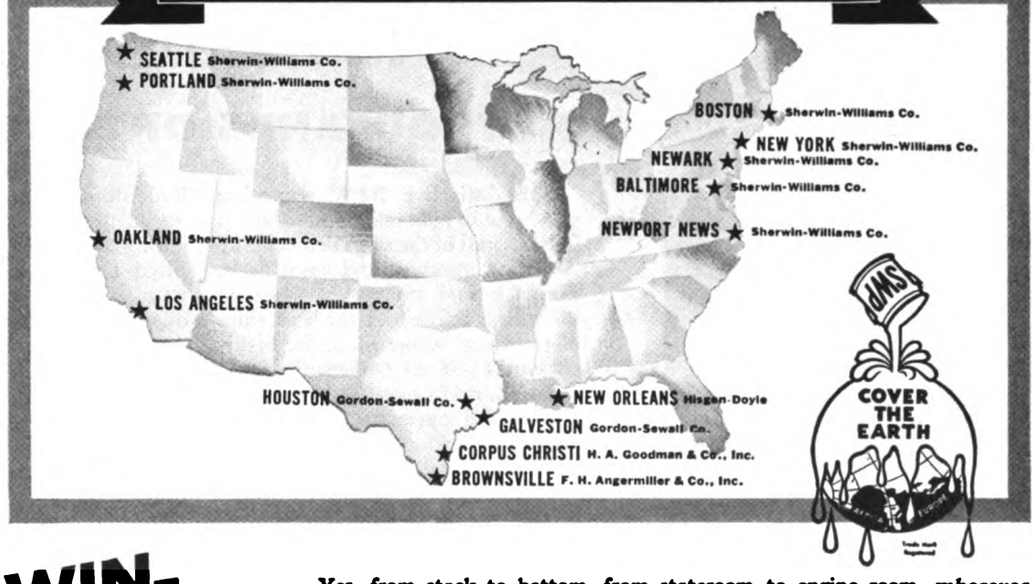
Signal Colors
Superstructure Paints
Deck Finishes
Engine Enamels
Cabin Finishes
Sher-Wil-Lac Deck Paint

to Bottom

Cargo Hold Finishes
Hull Paints
Boottopping
Anti-Corrosion and
Anti-Fouling Compositions

COMPLETE STOCK FOR IMMEDIATE DELIVERY AT THESE PORTS



IT'S SHERWIN-WILLIAMS ALL THE WAY!

Yes, from stack to bottom, from stateroom to engine room, *wherever* there's a shipboard job for paint to do, there's a Sherwin-Williams finish *designed* for the job! Designed *two ways!*

(1) Because *every* finish in the line is engineered by Sherwin-Williams specifically for the conditions *all* marine paint must encounter—the conditions under which the paint is put on, the conditions it meets in service.

(2) Because *each individual* finish is specially formulated to meet the *added* requirements of its particular application.

A single source of supply, a single standard of quality—that's Sherwin-Williams for marine finishes! The Sherwin-Williams Co., Marine Division, Cleveland 1, Ohio. (Export Division, Newark, N. J.)

Products of Sherwin-Williams Industrial Research

SHERWIN-WILLIAMS MARINE FINISHES

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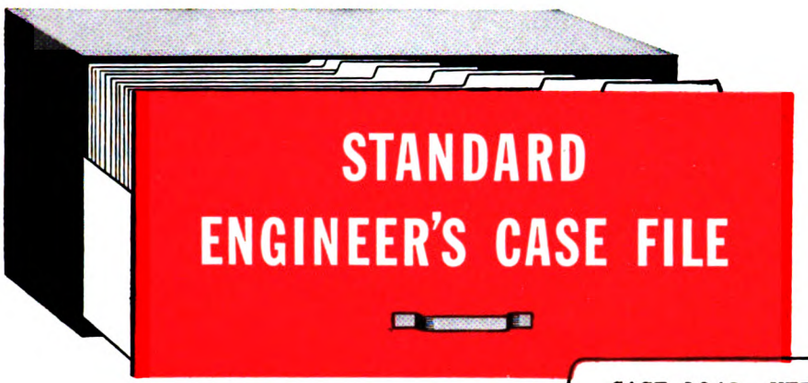
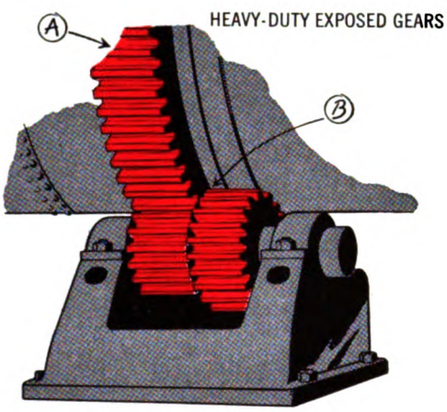


CASE 1042--KEEPING GREASE ON HEAVY-DUTY OPEN GEARS.



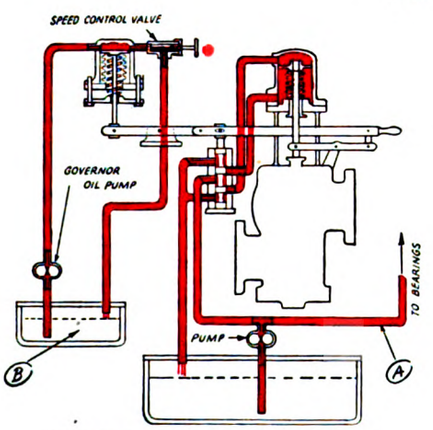
Extremely adhesive Calol Pinion Grease did not drip off a heavily-loaded open gear operating in moderate temperatures radiating from a rotary drier. Several grades make it adaptable to both high- and low-speed open gears on hoisting units, power shovels and other machines, wire rope, and grease-lubricated enclosed gears where climatic temperatures are low. Comes in four grades which are increasingly more adhesive: 0, 1, 2, 5.

A. Sticks to gear teeth and flows slowly back into place after displacement by pressure ... lack of drippage and waste promotes economy.

B. Tenacious lubricating film cushions shocks ... reduces frictional losses caused by sliding action of gear teeth.

Calol Pinion Grease sometimes requires heating for best application ... apply lightly on wire rope.

CASE 1048—STOPPING RUSTING, LACQUERING, SLUDGING IN STEAM TURBINES.



VARIABLE-SPEED OIL-RELAY GOVERNOR

Charges of inhibited Calol OC Turbine oil in various size turbines gave service many times longer than normally obtained with straight-mineral oils. Use in large and small units ... ring-oilers, circulating oil lubricating systems and oil-actuated governor relay systems. Comes in five grades: 5, 9, 11, 15, 19.

A. Contains highly effective corrosion inhibitor and has excellent metal-wetting ability. Keeps moisture in oil systems from contacting metal.

B. Oxidation inhibitor resists deterioration of oil and sludge formation caused by heat, moisture, air, dirt ... prevents plugging of oil lines.

Calol OC Turbine Oil in regular service showed no increase in acidity after several years ... turbine parts remained in same condition as when installed ... water and solid contaminants separated readily from oil in centrifuging or filtering systems.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

Standard Fuel and Lubricant Engineers are always at your service. They'll gladly give you expert service—make your maintenance job easier. Call your local Standard Representative or write Standard of California, 225 Bush St., San Francisco 20, California.

RPM CALOL

FOR EVERY NEED A STANDARD OF CALIFORNIA JOB-PROVED PRODUCT

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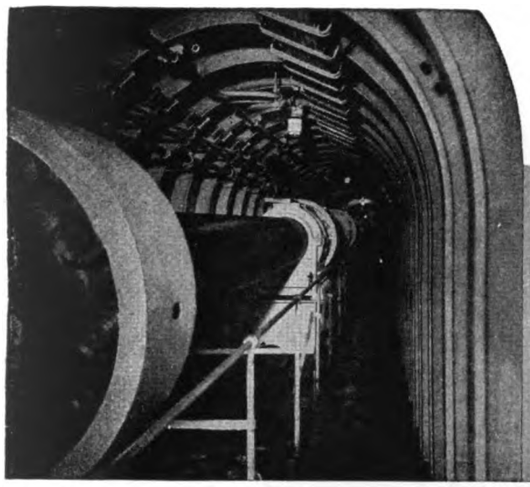

SHAFT ALLEY Chatter

Griswold Makes Tour of South American Ports

Countries along the west coast of South America will be the focus of the inspection tour taken by George Griswold, vice president and general manager of the Gulf and South American Steamship Co., Inc.

This service was inaugurated November 1, 1947, when the former services of the Grace Line and the Lykes Bros. Steamship Co., Inc., were merged to provide improved freight and passenger service on a fortnightly schedule with a fleet of modern, fast C-2 type vessels between Gulf ports and the principal ports of Colombia, Ecuador, Peru and Chile.

Mr. Griswold will spend two days in the Panama Canal Zone and then will go to Santiago, Valparaiso, Antofagasta and Arica, Chile; Lima and Callao, Peru; Guayaquil, Ecuador; and Cali and Buenaventura, Colombia. He will confer in each port with Gulf and South American Steamship Co., Inc., agents, shippers and consignees regarding the further development of two-way trade between the Gulf ports and the West Coast of South America ports.

On departing from New Orleans, Mr. Griswold said that he was particularly interested in developing Northbound traffic from the West Coast of South America.

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American-Hawaiian Steamship Company have reestablished their service between Port Newark, New Jersey and Pacific Coast ports.

United Fruit Ship Joins Navy at New Orleans

The ss CAMAYAGUA, United Fruit Company ship, has been designated as suitable for services as a naval auxiliary in time of war by Rear Admiral Lawrence F. Reifsnider, Eighth Naval District commandant. The Navy announced last month that a warrant had been presented to the ship's master, Captain Eivind Barnholdt, as a result of 50 per cent of the vessel's officers holding naval reserve commissions. The CAMAYAGUA is the third United Fruit ship to receive this designation.

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Lutz is Chairman of SF's Maritime Day Committee

Governor Earl Warren of California is announced as the speaker for the annual National Maritime Day luncheon Friday, May 21st, at the Commonwealth Club, San Francisco, sponsored by the Propeller Club of that port and the San Francisco Junior Chamber of Commerce.

E. Russell Lutz, vice president of the American President Lines, is chairman of the Maritime Day celebration committee. The Women's Organization for the American Merchant Marine will sponsor a marine art and sculpture exhibit at the Ferry Building, there will be the annual marine parade and, on Friday evening the Mariners Club of California will hold its annual Spring Frolic at the Palace Hotel.

BETHLEHEM LAUNCHES BIG ORE CARRIER . . . The CUBORE, the seventh of eight 24,000-ton ore carriers being built at Sparrows Point for the Ore Steamship Corporation, a subsidiary of Bethlehem Steel Company, is launched with MRS. ARTHUR B. HOMER, wife of the president of Bethlehem Steel Company, as sponsor.

Left to right: H. W. WARLEY, President of Ore Steamship Corporation; MR. and MRS. ARTHUR B. HOMER; MRS. H. C. CRAWFORD, wife of Bethlehem's Vice President, Traffic; MRS. J. W. LARKIN, wife of Bethlehem's Vice President, Industrial and Public Relations; J. W. LARKIN; H. C. CRAWFORD; and NORBORNE BERKELEY, Bethlehem Vice President.

O. J. WEBER, newly-appointed Washington Manager of American Export Lines

Washington Manager Appointed By American Export Lines

Announcement has been made by J. E. Slater, executive vice president of American Export Lines, of the appointment of O. J. Weber as manager of the Washington office.

Mr. Weber will handle company relations with the various Governmental departments and act as passenger department representative in Washington.

Before joining American Export Lines, Mr. Weber was assistant director of Governmental Affairs for American Overseas Airlines in England and during the war served as a Major with the U.S. Marine Corps. Previously he was associated with Socony-Vacuum Oil Company in the Near East following graduation from Hobart College.

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There will be two crew members for every three passengers aboard Matson's new luxury liner ss LURLINE, scheduled to sail from San Francisco April 15th, on her first voyage to Honolulu.

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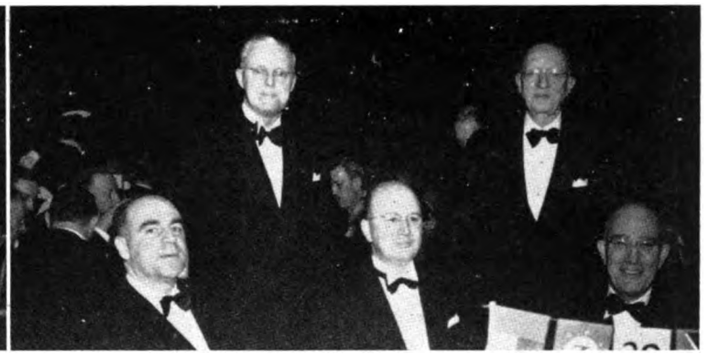
WITH 641 MEN WHO DERIVE THEIR INCOME FROM SHIPS AND SHIPPING PRESENT, attendance records for the annual Seattle Steamship Dinner were broken at the 21st Annual Dinner at Seattle on March 6. In attendance were guests from New York, Chicago, Vancouver, B. C., Portland, Oregon, Tacoma, Bellingham, Grays Harbor, and elsewhere outside of Seattle. To the upper left is the banner used in celebrating the event. A committee, shown upper right, headed by James F. Griffiths, president, James Griffiths and Sons, managed the affair. From left to right, standing: S. H. GUENTHER, Sudden and Christenson, Inc., Advisory Committee; JAMES F. GRIFFITHS, James Griffiths and Sons, General Chairman; C. J. GRAVESON, Moore-McCormack Line, Menu Committee; C. H. CARLANDER, Puget Sound Freight Lines, Reservations Committee; CLARK SCOTT, Marsh & McLennan, Decorations Committee.

Upper right—seated, left to right, H. E. LOVEJOY, Puget Sound Freight Lines, Arrangements Committee; R. K. JAGGAR, I. Frazier Co., Games Committee; E. J. BARRINGTON, Pope and Talbot, Inc., Finance Committee; A. E. LEE, Interocean Steamship Corporation, Entertainment Committee. Not shown in the photo were E. C. Bentzen, Olympic Steamship Co., Reception Committee; and Alex D. Stewart, The LOG, Publicity Committee.

Below—Picture to left, seated, left to right: W. DELANTY, Hoquiam, Twin Harbor Stevedoring Company; C. D. LINCOLN, A. R. VAN SANT, Pier 59 Dock Corporation; LEONARD SHROCK, The Compass Adjustor; A. D. SNAIDER. Standing left to right: PRESTON FALLER; Clark Tructractor; C. E. VAMMEN, DUNCAN STEWART, FRANK A. HILL, Twin Harbor Stevedoring Company.

Picture to right, seated, left to right: FRANK McNICHOLL, FRANK HARVIE, Kingsley Navigation Company, Vancouver, B. C., ELMER LEE, Virginia Dock Company, Seattle; standing, left to right: OSWALD CRAWFORD, Kingcome Navigation Company; Vancouver, B. C.; FRANK BURNET, Bellingham, Warehouse Company, Bellingham.



Below—Top row, left to right, LEW FOWLER, Portland Merchants Exchange; FRED MEYER, Knappton Tow Boat Company, Portland; M. C. COLLARINO, United Fruit Line; HARRY THOMPSON, Grace Line, San Francisco; W. D. VANDERBILT, Grace Line, Seattle.

Picture to extreme right, seated, left to right: TOM ALDERSON, Bogle, Bogle, and Gates; A. W. PATERSON, Consolidated Services, Inc.; A. E. FOREST, Springfield Boiler Company, Springfield, Illinois, C. J. PAVEY, Consolidated Services, Inc., CLAUDE WAKEFIELD, ED DOBRIN, Bogle, Bogle and Gates. Standing, left to right: EDWARD FRANKLIN, T. L. MORROW, Bogle, Bogle and Gates.

Bottom row, left to right, SCOTT MATHESON, Isaacson Iron Works; JOE GERBER, Everett Pacific Shipbuilding and Dry Dock Company; C. R. HUICK, Johns Manville Sales Corporation; FRED P. SCHMITT, United States Line, San Francisco; M. R. COLBY, Colby Steel and Engineering Company; PETER HOWARD, Howard Terminals, Oakland; N. J. LEONARD, Colby Steel and Engineering Company.

Picture to extreme right, seated, left to right: RALPH BUSH, WORTH FOWLER, American Mail Line; G. H. WAGNER, U. S. Maritime Commission; A. R. LINTNER, American Mail Line; OSCAR DAM, U. S. Customs; H. T. KRULL, American Mail Line; R. A. CLANCEY, R. A. Clancey Company; standing, left to right: G. J. ACKERMAN, W. L. WILLIAMS, American Mail Line.

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SOUTHERN CALIFORNIA MARINERS AT 20th ANNUAL BILGE CLUB PARTY

Shields Joins Portland Staff of Sudden & Christenson

E. E. (Jack) Shields has transferred from Coastwise Line to become assistant district manager of Sudden and Christenson, Inc. at Portland, Oregon. He was with Coastwise Line after a merger of the Coastwise and International Shipping agencies in the Pacific Northwest late in 1947. Prior to the merger he was Portland manager of International Shipping Company. He was manager of Willapa Harbor Stevedoring Company, an affiliate of Sudden and Christenson, Inc., before the war. He served in the Coast Guard during the war.

Douglas S. Barnes of the Coastwise Line's district operating department has been appointed district freight agent to assume the duties handled by Shields.

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J. A. Johnson Joins Calmar Los Angeles Staff

J. Arthur Johnson has been named Los Angeles manager for Calmar Steamship Corporation. Reared in the Pacific Northwest, Johnson was traffic manager at Seattle for Calmar before the war. Earlier he was stationed at Seattle and Portland with Swayne and Hoyt, Ltd., agents for Calmar Line. A naval reserve officer he served in the port director's office at Seattle and in the Pacific during the war. He dissolved a ship and airline agency business at Seattle upon accepting the Calmar Los Angeles appointment.

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Waterfront Employer Group Changes Name

The Waterfront Employers Association of Portland changed its name to Waterfront Employers of Oregon and Columbia River at the annual meeting in February. N. A. Moore, American-Hawaiian Steamship Company, was elected president; E. S. McGrath, Sudden and Christenson, Inc., vice-president. R. E. Ferguson was reelected secretary-treasurer and manager. Moore succeeds C. R. Jones of W. J. Jones and Sons.

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Frank Cameron who has handled publicity for American President Lines, in connection with their new luxury liner, PRESIDENT CLEVELAND, Grace Line and Matson Line is now associated with the Frank DiMarco Agency as account executive.

GRAND BALLROOM of the Biltmore Hotel, Los Angeles, was filled to capacity Saturday, February 21, when the 20th Annual Bilge Club Banquet drew virtually the entire maritime fraternity of Southern California.

Committee chairmen who staged the event are at the head table, from left to right: JAMES J. BUNTIN Secretary-Treasurer, Forster Shipbuilding Co., Terminal Island; FLOYD G. NELSON, Assistant Superintendent, Marine Department, The Texas Co., Los Angeles; WILLIAM J. COURTIOUR, Superintendent, Bethlehem Steel Company, Shipbuilding Division, Terminal Island; EARL ARCHIBALD, Marine Superintendent, Sunset Oil Company, Los Angeles; President WALTER C. RICHARDS, SR., Wilmington Iron Works, Wilmington.

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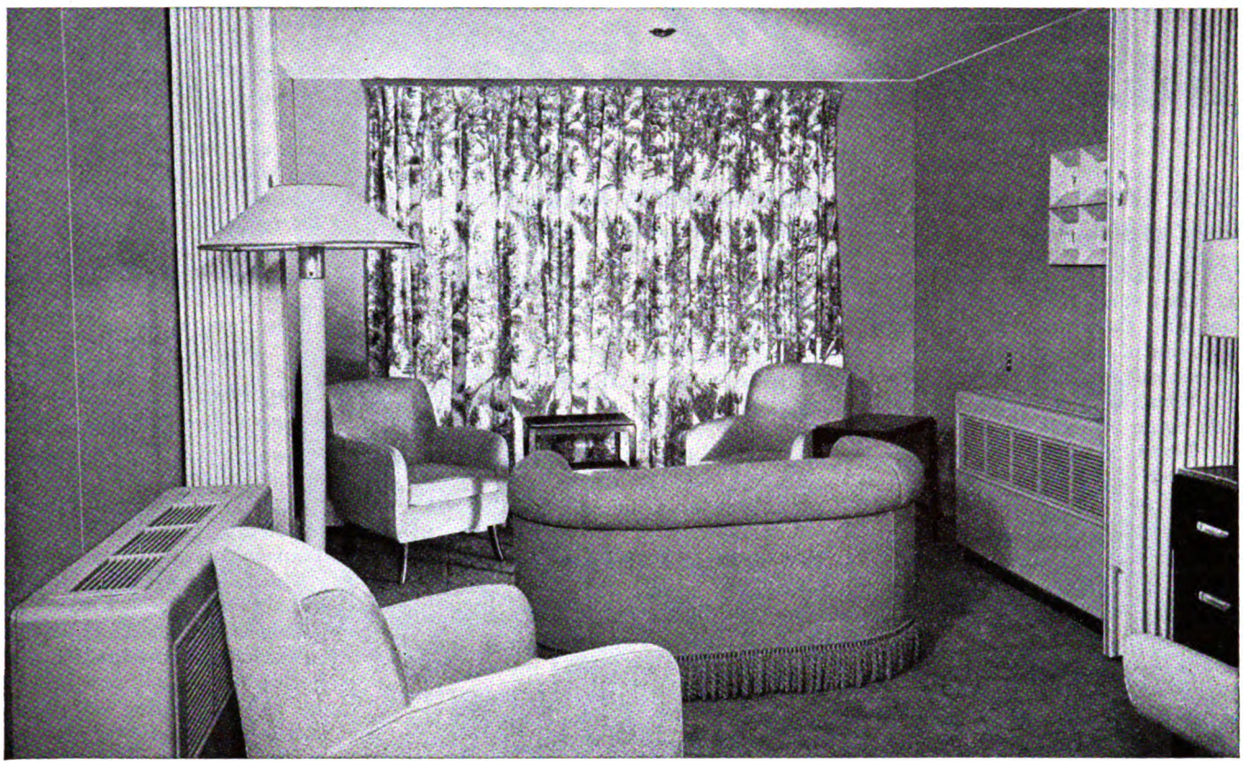

Shipboard "weather" by Carrier for two new Presidents

Two Carrier centrifugal refrigerating units, each compactly assembled on a single base with its respective cooler and condenser, supply the necessary cooling effect for air conditioning the passenger and crew's quarters on the newest 23,000-ton American President Line vessels . . . the *President Cleveland* and the *President Wilson.*

A Carrier Conduit Weathermaster System provides air conditioning for all first-class staterooms. The occupants of each room are assured of proper ventilation, and individual automatic control of room temperatures.

The Carrier equipment furnished for these two great liners effects a substantial economy in space in comparison with other possible methods.

Carrier offers a specialized and complete service to the marine field. Its Marine Department is staffed by engineers thoroughly experienced in design problems. They are always glad to help with specific questions about installations on either new or modernized vessels. After a Carrier-equipped ship goes into service, the operators can count on Carrier service at every deep-water port in the United States and at strategic points along the world's major trade routes.

Some new and re-conditioned vessels served by Carrier Refrigeration and Air Conditioning

SS AMERICA
SS ANCON
SS ARGENTINA
SS PRESIDENT CLEVELAND
SS DEL NORTE
SS DEL MAR
SS DEL SUD
SS LURLINE
SS EXCALIBUR and Class
SS HAWAIIAN RANCHER and Class
SS SANTA CLARA and Class
SS AMERICAN FARMER and Class

CARRIER CORPORATION, MARINE DEPARTMENT
405 Lexington Avenue, New York 17, N. Y.—MUrray Hill 6-6200
625 Market Street, San Francisco, Calif.

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SHAFT ALLEY (continued) Chatter

SS DOCTOR LYKES Brings "Cowboys" To Texas

When the ss DOCTOR LYKES arrives in New Orleans early this month, three British lads and their parents, Mr. and Mrs. Fred Payne, of London will be greeted by representatives of the press, newsreels and national magazines. The Payne family is en route to their new home in LaMarque, Texas, after a cordial welcome from most of the people living in the Lone Star State.

It started more than a year ago when the Payne youngsters addressed a letter to "A Cowboy in Texas, U.S.A." They wanted to have a cowboy's own description of life on the range. When the hospitable Texans learned of the family's dire circumstances they invited them to Texas to live. Mrs. Glen Webster of LaMarque has donated land upon which the Paynes will build their new home. Other Texans have contributed to a special fund for the war-stricken family. The youngsters will now find out about western cowboys for themselves.

MORMACPENN Receives Naval Reserve Pennant

MORMACPENN, a cargo-passenger liner, is the eleventh ship of the Moore-McCormack Lines fleet to receive the Naval Reserve Merchant Marine Pennant. Four other Moore-McCormack ships—the MORMACSUN, MORMACGULF, MORMACMOON and MORMACDALE—are eligible to receive pennants and they will be presented to them upon their next arrival in port. Lt. Comdr. Hans E. Hansen is master of the MORMACPENN.

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Waterman Converts Transport For U. S. Lines

At the port of Mobile, Alabama, the repair division of the Waterman Steamship Corporation delivered the ss AMERICAN SCIENTIST to representatives of the United States Lines. The vessel, formerly the ss DORCHESTER, was completely converted in the Waterman Repair Yards from a troop transport to a 17-knot, modern C-2 type dry cargo ship.

Earlier at Mobile, the Gulf Shipbuilding Corporation completed and delivered two cargo vessels, the ss ROBIN DONCASTER to Seas Shipping Company, and the ss AMERICAN PRODUCER to the United States Lines.

Frank C. Waller, Vice-President and General Manager of the Waterman Repair Division pointed out that the conversion work on the ss AMERICAN SCIENTIST took approximately one hundred ten days and provided employment for some four hundred men per day. The new vessel is 435 feet in length, has a beam of 63 feet and a depth of 40 feet 6 inches. The new ship, which has accommodations for 12 passengers and a crew of 43, has an overall deadweight tonnage of 8,232 tons.

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Long Haul for Moran Tugs

Two unusual towing and ferrying operations involving the delivery of marine equipment to foreign destinations is being handled by two veteran Moran Towing & Transportation Co. crews.

The 143-foot, 1,900 H.P. Diesel-electric tug EUGENE F. MORAN, under command of Captain Hugo Kroll, New York, is towing the dredge MOP 238-C (Ex-Barlow) from Baltimore to Buenos Aires for the Argentine Ministry of Public Works.

The dredge, built by the Ellicott Machine Corp. of Baltimore for the Atlantic, Gulf & Pacific Co., original owners, is 252 feet long with a 44 foot beam, and the Moran office in New York estimated 73 days of actual towing time, 105 days for the round trip for the tug.

Another crew, under Captain Daniel Halpin, also of New York, is delivering the former Navy LST 376-B from Mobile to Buenos Aires under its own power, for Argentine government authorities.

The 3,500-ton capacity vessel is carrying two tugs (strapped on deck), automobiles, thousands of feet of hydraulic dredge pipe, and quantities of pipe line pontoons. It is capable of ten knots, and stores for a 35-day voyage were taken aboard in the Alabama port.

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C. L. Dodd Moves to Yokohama For United States Lines

C. Lee Dodd has been appointed assistant general agent at Yokohama for United States Lines. He was district manager for Coastwise Line at Seattle for a number of years prior to closing of Coastwise Line office at Seattle and assignment of International Shipping Company as agent in late 1947.

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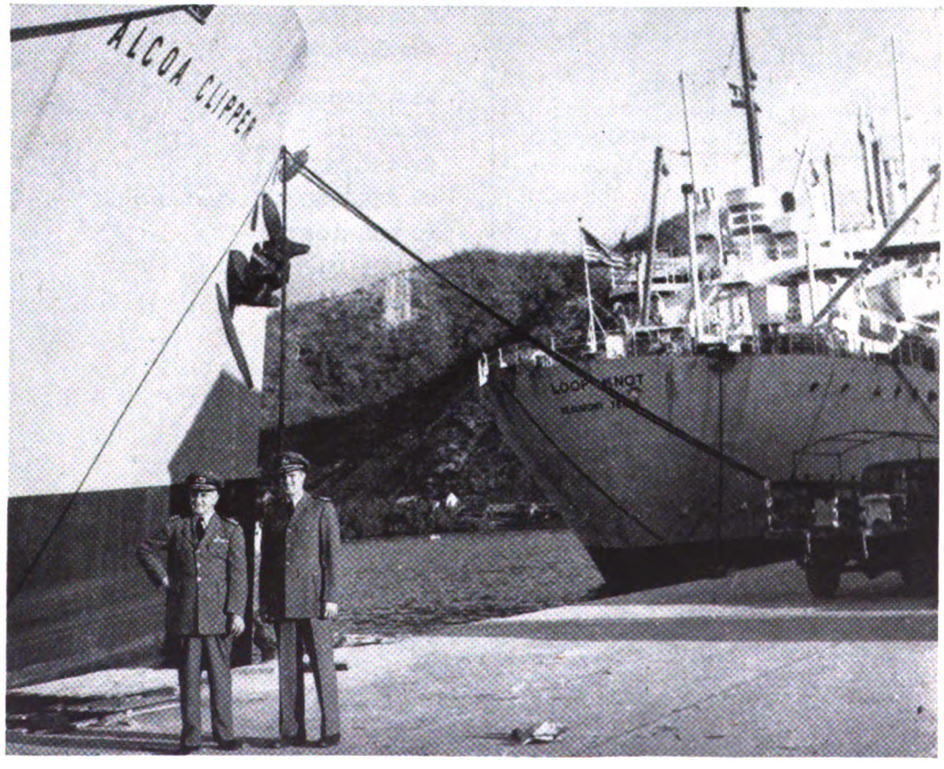
James Griffiths and Sons Operating In World Trade

James F. Griffiths, president of James Griffiths and Sons, Inc., Seattle, has announced the company is taking additional Liberty ship bareboat tonnage for operation in world-wide trades. A recent vessel taken is the ss FRANK J. SPRAGUE. Handling of vessel and cargo agency representation is a major activity of the company.

LIKE FATHER LIKE SON . . . the senior and the youngest master in the 68-ship Alcoa fleet. When CAPTAIN BODVAR OIESTAD, SR., Master of the ALCOA CLIPPER, found berthed next to his ship at a Venezuelan port, the Alcoa freighter LOOP KNOT, he had his first opportunity to pay his respects to the LOOP KNOT'S master —25-year old BODVAR OIESTAD, JR.

For CAPTAIN OIESTAD, JR., right, the LOOP KNOT is a first command. A graduate of the United States Merchant Marine Academy at Kings Point, class of '43 he is one of the youngest captains in the American Merchant Marine. The ALCOA CLIPPER is one of a long list of vessels captained by the elder BODVAR OIESTAD, left. At sea since 1911, the Norwegian-born senior captain has held a master's license since 1914.



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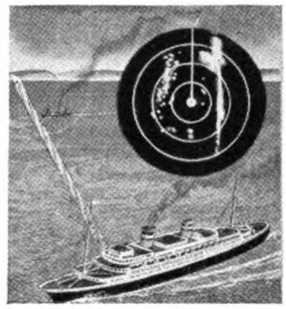
1. PILOTAGE



2. POSITION FINDING

3. ANTI-COLLISION

4. STORM DETECTION

Radiomarine's 3.2cm

4-PURPOSE RADAR

...now aboard the liner

NIEUW AMSTERDAM

Mr. Arnold Webster, Senior Second Mate and navigating officer of the NIEUW AMSTERDAM, viewing the 12-inch scope of the Radiomarine Radar.

"We are very well satisfied with the over-all performance of our Radiomarine Radar," says Commodore Siebe Vlietstra, Master of the S.S. NIEUW AMSTERDAM, Flagship of the Holland-America Line.

"It is used a great deal for navigation on our trips between Rotterdam and New York. Radar is used every time the ship has to make a landfall under poor weather conditions. We have been able to pick up high coastlines at 50 miles.

"Small buoys marking the sailing lanes in the English Channel have been observed at distances up to 6 to 7 miles.

"The NIEUW AMSTERDAM, off Cape Hatteras, picked up on radar, an unmanned and floundering LST at 8 miles at night. We contacted the U.S. Coast Guard and gave them its exact location. On one trip using our radar we located a Catalina Flying Boat which flew out to the ship to drop serum. The flying boat was picked up at 9 miles and was tracked all the way to our ship.

"Ships have been picked up and plotted in heavy rain."

You get all 4 Navigational Aids with Radiomarine 3.2cm Radar

Ship operators get more for their money with Radiomarine's 3.2cm Radar. Its *all-purpose* application is the answer to faster, safer, more dependable navigation at sea, in harbors or on inland waters.

For complete information write: Radiomarine Corporation of America, 16 First St., San Francisco, Cal. Tel.: Garfield 0673.

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840 S. E. Third Ave.
Tel.: Lancaster 8866

Los Angeles, Calif.
437 No. Avalon Blvd., Wilmington
Tel.: Terminal 4-1581

Seattle, Wash.
1008 Western Ave.
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RADIOMARINE CORPORATION of AMERICA

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SHAFT ALLEY (continued) Chatter

Naval Architects Form Southern California Section

After some months of preliminary organization proceedings, the Southern California Section, The Society of Naval Architects and Marine Engineers, was launched formally March 2 in a general meeting at the Pacific Coast Club, Long Beach. Formal balloting resulted in the election of the following officers and executive committeemen:

Chairman—Karl French, consulting naval architect and marine engineer, San Pedro.

Vice-chairman—Harry J. Summers, retired Mar. 1 as principal surveyor, American Bureau of Shipping, Wilmington.

Secretary-treasurer—Arthur R. Pegg, Sr., owner, International Marine Paint Agency, San Pedro.

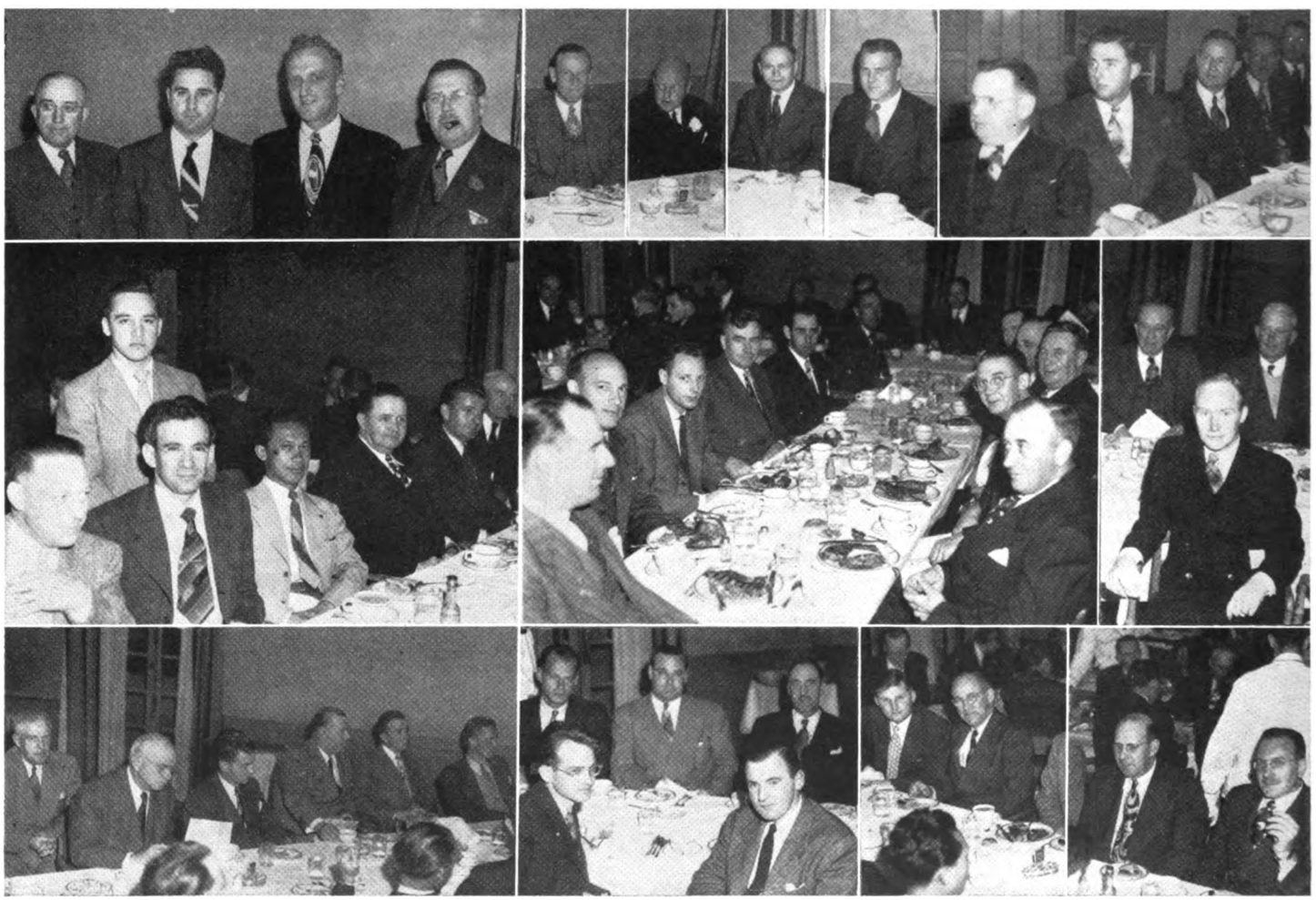
Executive Committeemen: Herbert E. Pickering, president, W. H. Wickersham & Co., Inc., San Pedro and president, Ocean Agencies, San Francisco; John T. Gilbride, general manager, Todd Shipyards Corp., Los Angeles Division; and Kenneth M. Walker, surveyor, Walker, Potts & Wyatt, San Diego.

All named are members of the national organization of The Society of Naval

(Continued on Page 22)

NAVAL ARCHITECTS OF SOUTHERN CALIFORNIA ORGANIZE A SOCIETY . . . Top row left to right—Elected unanimously are these officers of The Society of Naval Architects and Marine Engineers, Southern California Section: ARTHUR R. PEGG, SR., Secretary-Treasurer; JOHN T. GILBRIDE, Executive Committeeman, Chairman KARL FRENCH; HERBERT E. PICKERING, Executive Committeeman. Members from the Northern California Section of the Society and speakers of the evening were: WILLIAM B. WARREN, American Bureau of Shipping; W. MILLER LAUGHTON and MORRIS WEITZNER, Bethlehem San Francisco Shipyard. F. P. MILLER, American Bureau of Shipping; PAUL W. HILLER, Paul W. Hiller Co.; E. W. McKENZIE, C. F. Braun Co.; SIDNEY S. GRIFFES, Shell Oil Company; THOMAS B. FORSTER, Forster Shipbuilding Co., Inc., EDWARD PIKE, American Bureau of Shipping.

MIDDLE ROW, left to right: W. C. HARRIS, Long Beach Naval Shipyard; BENJAMIN F. REED III, Naval Architect; PHILIP FINKELSTEIN, and C. J. AGUINALDO, Long Beach Naval Shipyard; WILLIAM HARRINGTON, Bethlehem San Pedro Yard; W. C. RYAN, Joshua Hendy Iron Works; ALBERT O. PEGG, Marine Solvents Service Corp. (Left side of table, beginning at camera) JOHN R. BLACK, American Bureau of Shipping; B. C. KNERR, Consolidated Steel Corp.; JOHN O. HEINTZ; JOHN F. SHEA, Bethlehem San Pedro Shipyard; GEORGE A. BRADFORD, P. Banning Young; (right side of table, beginning at camera) E. B. POWELL, Bethlehem San Pedro Shipyard; JOHN C. McKNIGHT, American Bureau of Shipping; JOSEPH T. HARE, U. S. Maritime Commission. L. E. "TED" GEARY, Naval Architect, Craig Shipyard; R. J. McCAUSLAND, Ralph Parkins Co.; DEAN B. JOHNSON, San Diego Marine Construction Co.



BOTTOM ROW, left to right: J. L. SMITH, G. BRUCE NEWBY, and CLINTON NEWBY, Naval Architects, Long Beach; COLIN DAVIES, Marine Surveyor, Redondo Beach; LIEUTENANT COMMANDER JAMES C. COCHRAN, U. S. Naval Repair Base, San Diego; C. W. LAPWORTH, Merle J. Davies & Assoc.; center photo, front row; FRED HOBLIT, Lockheed Aircraft Co.; U. W. HIRD, Union Oil Company of California; back row, DAIR N. LONG, Naval Architect; ARTHUR DeFEVER, Wilvers & DeFever; MYLES RADOS, Harbor Boatbuilding Co.; WILLIAM B. CRAWFORD, U. S. Maritime Service, Crawford Navigation School; COMMANDER HENRY B. McLEOD, U. S. Navy (ret.); PAUL GAUDIN, American Pacific Steamship Co.; and BERT HALE, Marine Solvents Service Corp.

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Converted by Bethlehem

The S. S. Argentina on her reconversion sea trial

FIRST IN SPEED AND CRAFTSMANSHIP

Reconversion of the liner *Argentina* from a troop transport to a first-class passenger ship offers concrete evidence of the advantages ship owners and operators enjoy whenever Bethlehem does the job.

Speed. Although laid up for reconversion three to four months later than her "Good Neighbor" sister passenger ships, the *Argentina* was the first to be completed and the first to resume Moore-McCormack Lines' prewar service to east coast ports of South America.

Craftsmanship. The enthusiastic reaction of marine experts to the *Argentina's* performance on her sea trials attested to the high degree of skill "worked into" the conversion. "Surprisingly good," said the chief trial inspector for the U. S. Maritime Commission. "Better than ever," commented the officer who has been master of the vessel since 1938.

This combination of speed plus craftsmanship is always available to owners and operators of vessels converted by Bethlehem.

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SHAFT ALLEY (continued) Chatter

Pacific Far East Line Announce Promotions

Pacific Far East Lines, Inc., San Francisco, promotions and appointments among top personnel are announced by Thomas E. Cuffe, president, as follows:

John R. Wagner, formerly freight traffic manager, is now vice president and general manager. Mr. Wagner has spent his lifetime in trans-Pacific shipping, the greater part with American President Lines. During the war he was with the Army Transportation Corps, attaining the rank of lieutenant colonel.

T. S. Lowry, who resigned from the United States Army last year with the rank of colonel, is a new vice president in charge of operations. In the Army he was chief of the water division of the transportation corps. His business career has been entirely in shipping, first with the old United States Shipping Board and later with Isbrandtsen-Moeller Steamship Company. During the war he was port commander in Hull, Naples and Marseille. Transferred to the Sixth Army in the Philippines, he took part in the initial landings on Japanese soil.

A. L. Papworth is a newly-appointed vice president in charge of sales. Mr. Papworth is a nationally-known sales executive and spent 21 years with the Moore Corporation in Salt Lake City, Portland, San Francisco and New York. Earlier he was with E. I. du Pont de Nemours Company. He was an all-American guard at the University of Pennsylvania.

L. G. Dunn, formerly assistant to Mr. Wagner, is promoted to the post of freight traffic manager. He has been in shipping since 1931 with the Dollar Lines and the American President Line and is an authority on traffic problems, cargo handling and freight operations.

Hubert Brown, assistant to the president, started his shipping career as secretary to A. F. Haines, vice president of the old American Mail Line in Seattle, later moving to San Francisco to become secretary to R. Stanley Dollar of the Dollar Lines. He joined the solicitation staff of American President Lines, eventually becoming assistant manager of the freight department.

Raymond J. Pries, new assistant freight manager, formerly was general freight agent. Previously he was district freight agent for the American-Hawaiian Steamship Company and, during the war, was director of the traffic branch of the water division of the San Francisco Port of Embarkation and traffic manager of the west coast regional office of the United States Maritime Commission.

PROMOTIONS AND APPOINTMENTS at Pacific Far East Line . . . top row, left to right: JOHN R. WAGNER, Vice President and General Manager; T. S. LOWRY, Vice President in Charge of Operations; A. L. PAPWORTH, Vice President in Charge of Sales. Bottom row, L. G. DUNN, Freight Traffic Manager; HUBERT BROWN, Assistant to the President; RAYMOND J. PRIES, Assistant Freight Traffic Manager.

So. Calif. Naval Architects

(Continued from Page 20)

Architects and Marine Engineers. Officers serve to April 30, 1949, and committeemen serve, respectively, one, two and three years.

Present at the March meeting were a number of prominent professional men, including William B. Warren, principal surveyor, Pacific Coast, American Bureau of Shipping, attending from San Francisco where he is chairman of the Northern California Section of the Society; W. Miller Laughton, Pacific Coast District general manager, and Morris Weitzner, chief engineer, of Bethlehem Steel Co., Shipbuilding Division, also from San Francisco.

After dinner, French, then acting as temporary chairman, opened the meeting. Acting secretary Pegg read the minutes of preliminary meetings. Warren, of American Bureau, was introduced by French as the first speaker of the evening, with Laughton following.

Laughton stressed the value of the Sections for the younger element in ship design and also pointed out that as individuals, naval architects should do all they can to see that Congress "puts the dough on the line for peace-time shipbuilding."

Weitzner followed with a few appropriate remarks, and the meeting then took up the formal election of permanent officers. Ballots were returned, and the panel as listed above was elected unanimously and installed forthwith. By-laws proposed were adopted unanimously.

Chairman French intimated that the organization might affiliate with a professional group known as the Southern California Technical Council, composed of technical men in all fields of engineering.

A junior member, William B. Crawford, master mariner, U. S. Maritime Service, associated with his father in the Crawford Navigation School, San Pedro, then was introduced, and presented the single paper of the evening. The subject, entitled, "Obsolete Navigation Laws in a Modern World," brought to attention the legal status of radar and other navigation aids with respect to ship collisions, as determined by court opinions.

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Kerr Appoints New Orleans Traffic Manager

George Simno, well known in Gulf steamship circles for almost forty years, was appointed district traffic manager of Kerr Steamship Company of New Orleans. From 1929 to 1941, Mr. Simno was vice president of Ross & Heyn, Inc., and during the war years was connected with the War Shipping Administration. He recalls that his connection with Kerr renews an association with Charles Harrington, Gulf manager, which started before World War I. He had worked for Mr. Harrington who was then manager of the Hamburg American Line in New Orleans.

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Victorious steam towboat "Kokoda" completing Mississippi River towboat race at St. Louis, Missouri, January 27th, 1948.

One Swallow Doesn't Make a Summer...

But, the recent victory of steam over diesel power in the Mississippi River race between the towboats "Kokoda" and "Helena" again proves the flexibility and reliability of Foster Wheeler Marine Steam Generators.

The "Kokoda" is powered by two 1,800 hp. steam engines. Steam is supplied by one Foster Wheeler Type "A" Marine Steam Generator, equipped with radiant super-heater and cast iron covered economizer, originally designed for 2,000 engine horsepower. The difference in boiler and engine ratings is due to wartime substitution of equipment.

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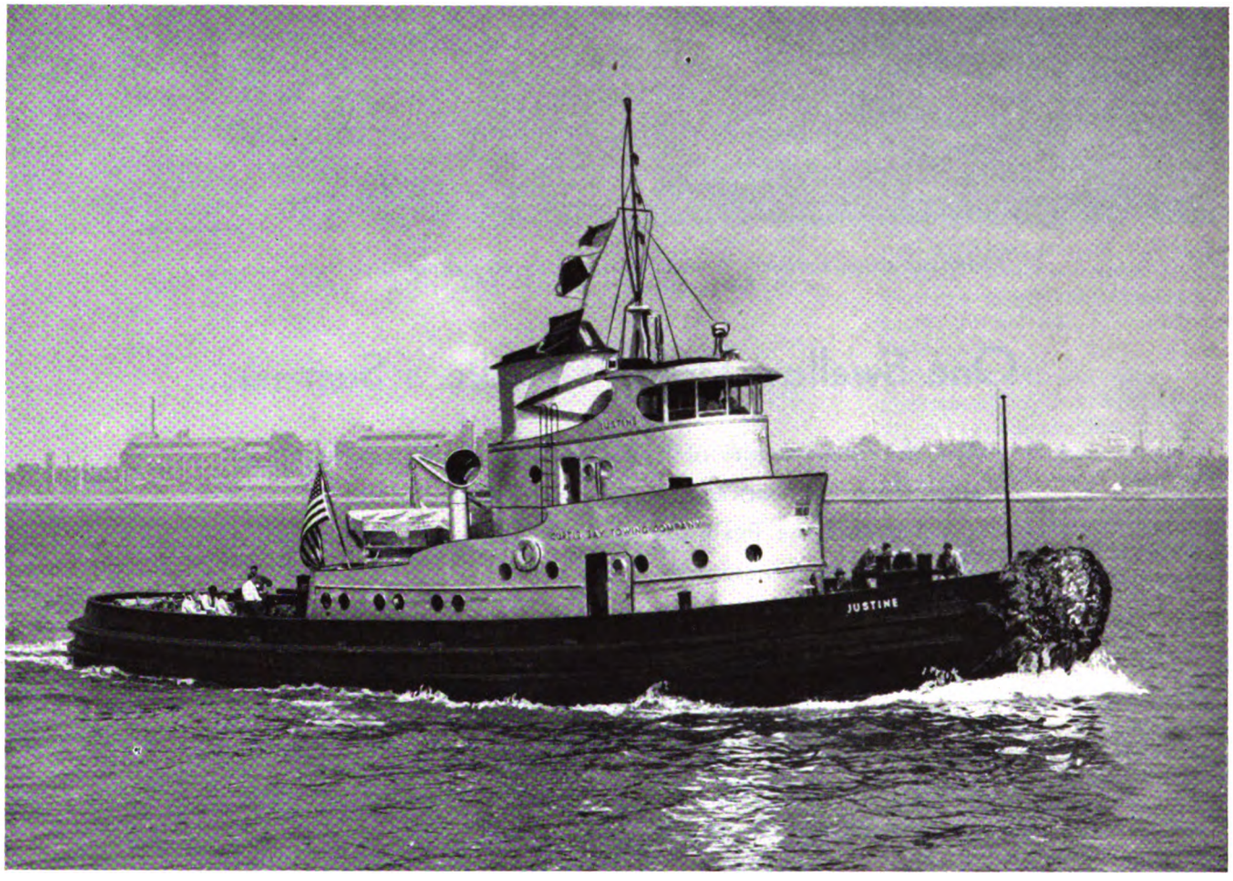

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Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

APRIL, 1948 Vol. 43, No. 4

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Editorial Features

Port of New York—A Sound Plan for Its Future 27
Lloyd's Report on World Shipbuilding 31
Design Problems of a Modern Oil Tanker 36
How High Are Shipping Profits 39
Washington Reporting 44
General Cargo Handling — Developments and Solutions. Part II 46
Operating Ideas
Consequences of Low Temperature Refrigeration 52
Ways to Calculate the Stability of Cargo Ships 53

Departments

Shaft Alley 16-22
The Society of Port Engineers 49-50
Ports 56-57
Equipmentalk 64

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Who Wants to Transfer Ships Under the Marshall Plan?

The State Department has gone to extreme lengths to shove the ship transfer section of the Marshall Plan down the throat of Congress, despite the fact that both the House and Senate sent to the White House a bill specifically prohibiting these transfers, and the fact that many have opposed this provision of the "plan" while none except the State Department have advocated it. Here's the score to-date:

U. S. Senate

S. J. Res. 173—"Nothing contained in this or any other Act shall be deemed to authorize the U.S. Maritime Commission to charter warbuilt vessels to any person who is not a citizen of the United States. (Authority to sell to non-citizens expired February 29, 1948, and was not extended.)

U. S. Maritime Commission

Letter to Congress December 4, 1947—"While in full sympathy with the overall objectives of the ERP, the Commission believes that the sale, charter, loan, or outright grant to participating nations of any U.S. vessels, in addition to the large number already approved, for sale to them would be contrary to the best interests of the American Merchant Marine."

American Legion

Resolution adopted at Annual Convention—"We aggressively oppose any sales, charters, or deliveries of American warbuilt vessels to nations, persons, or organizations of those nations who were at any time enemies of the U.S. during the course of World War II." (Pre-Marshall Plan period. The issue at that time was transfer of vessels to Germany, Italy and Japan for transportation of relief cargoes.)

Congress of Industrial Organizations

CIO Program for the merchant marine —"The authority to charter and sell American vessels for transfer to foreign flags must not be renewed after February 28, 1948."

American Federation of Labor

Resolution adopted at national convention—"A serious threat to the American Merchant Marine is embodied in Senate Bill 1619 . . . which would authorize the President to charter government-owned warbuilt ships to any foreign operator. Resolved that the American Federation of Labor go on record as being opposed to S. 1619 and do all in its power to defeat this Bill."

U. S. Chamber of Commerce

Statement by president, February 4, 1948—"And we must guard against the creation of unwarranted low-cost competition with American shipping by the proposed transfer of ships to foreign countries as part of the European Recovery Program."

Mississippi Valley Association

Resolution adopted at national Convention—"With special reference to the proposal of the State Department to transfer 500 ships to foreign nations, which we strongly oppose."

Women's Patriotic Conference on National Defense

Passed resolution—"Any further weakening of our national defense reserve fleet by additional transfers by sale, charter, or gift of U.S. vessels to foreign flag is vigorously opposed." (This Conference consists of 60 women's organizations.)

American Merchant Marine Conference

Resolution passed—"That the sale, lease, charter, or gift of government-owned ships to foreign nations or nationals be stopped because these nations have been restored to their pre-war tonnage status."

It would seem that only the European nations which stand to profit, and the U.S. State Department, want to transfer these ships.

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Naval Architects Offer Scholarships

Applications for nominations for two graduate scholarships which are awarded annually by The Society of Naval Architects & Marine Engineers are being received by the secretary of the Society at 29 West 39th Street New York. Applications should be filed before April 15, 1948, for the school year 1948-49.

These two scholarships, worth $1,750 each, are for postgraduate study leading to a degree of Master of Science in Naval Architecture and Master of Science in Marine Engineering. The successful candidates may select the institution at which they desire to pursue their studies, subject to the approval of the scholarships committee of the Society. In order to be eligible for these scholarships, a candidate should hold an undergraduate degree in some phase of engineering applicable to the marine industry and possess other broad qualifications which would make him ready for technical graduate study.

The Society's plan for awarding annually two graduate scholarships has been most successful and each recipient of these scholarships has invariably made a fine record after graduation.

The Society has also made funds available for a fellowship at the Experimental Towing Tank of Stevens Institute of Technology, Hoboken, New Jersey. The first award of the new fellowship, which will offer a year of study and practical experience in hydrodynamic research and techniques of model testing of ship and flying boat hulls, will be made in the near future. With the establishment of the fellowship, the Society is for the first time providing a scholarship for practical training and research.

Funds for the new fellowship will be administered by Stevens Institute of Technology, and candidates should make application direct to Professor John P. Fife, personnel director of the Towing Tank.

The fellowship is open to graduates of engineering colleges.

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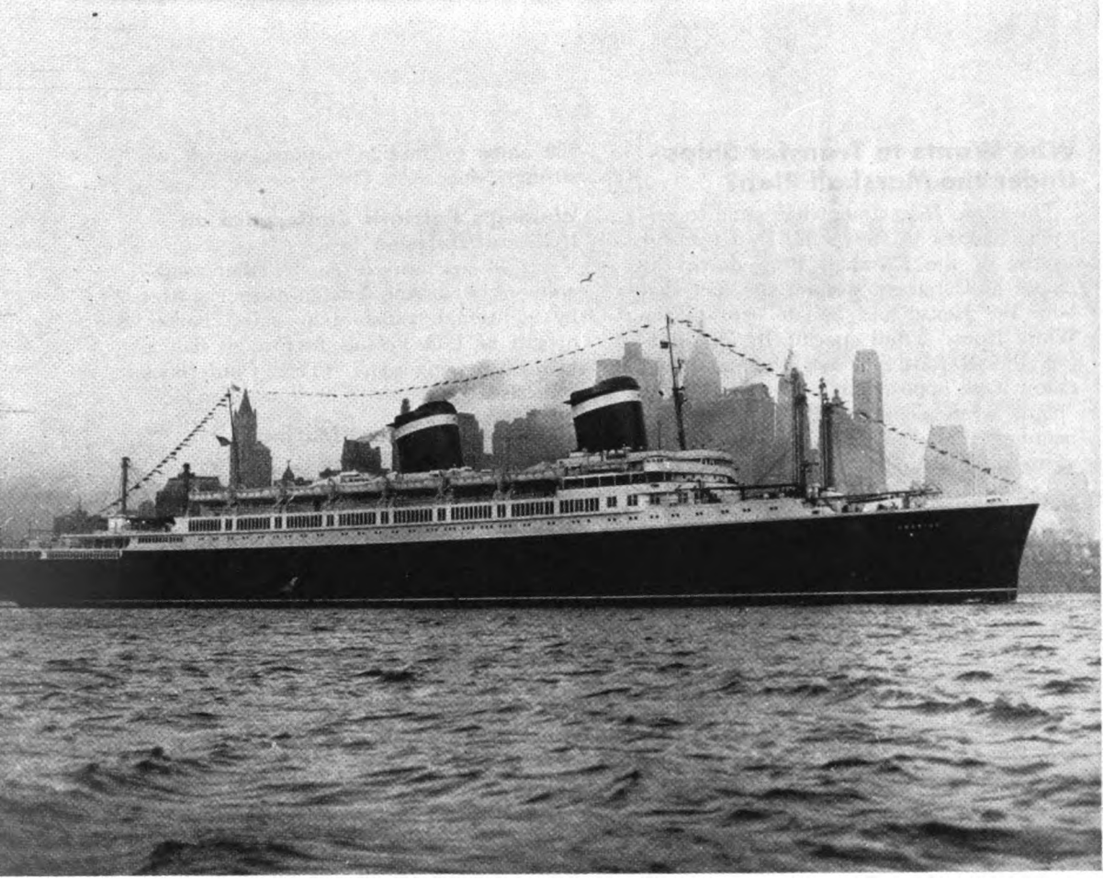

CONTRAST IN PROGRESS

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PORT OF NEW YORK

A SOUND PLAN FOR ITS FUTURE

The Port of New York Authority presents its plan for rehabilitating the New York waterfront in twelve years at a cost of $114,000,000.

Four months to the day after Mayor O'Dwyer requested a survey, the Port of New York Authority handed him one of the most comprehensive port survey and rehabilitation projects ever undertaken. Unlike the proposal of the World Trade Corporation, the Port Authority proposal wades right into the traffic problem and recognizes it as the prime deterrent to the free flow of traffic through the Port. It has concentrated on getting trucks off the streets and onto the piers where they belong. It also proposes consolidation of scattered carfloat stations into four union terminals, one of which is combined with a vast Union Produce Terminal project.

The plan submitted by the Port Authority was a definite committment—it will go ahead with the projects it has proposed. There are no innocuous blandisments such as the report of the WTC contained, whereby that body would proceed "assuming that the Corporation finds it advisable, after receiving up-to-date cost figures, etc." In contrast to the indefinite report of the WTC, the Port Authority is ready to plunk $114,000,000 on the line during the next 12 years to put the Port of New York back in the running.

For further comparison of the two plans for rehabilitating the Port of New York, see the article "Who's Going to Rebuild the Port of New York," page 29, The LOG for December, 1947. Excerpts from the Port of New York Authority's plan follow:

PORT AUTHORITY PLAN

The Port Authority's port improvement program is so designed that it will be adequate and economic. The Authority has been particularly careful to estimate conservatively the needs of the port. The first step in the organization of the Port Authority's study was the preparation of a complete inventory of the waterfront facilities of the whole Port, and appraisal of the pier requirements of the future.

An examination of the demand for ship berths during four peak periods of New York Harbor activity, namely, 1929, 1941, 1944 and 1947, revealed that in the entire Port of New York not more than 250 ships at a time sought berths for commercial cargo and passenger operations.

This figure has been modified, for the purpose of the Port Authority proposal, to conform with the trend of future trade and travel through the Port of New York on seagoing vessels. The increasing size and capacity of ships and the speed of cargo transfer between ships and piers should result in the need for fewer berths, but larger and more efficient adjacent wharf area.

Over 3,500,000 tons of railroad freight were delivered or received at waterfront railroad stations in Manhattan in 1946, including about 1,250,000 tons of fresh fruits and vegetables. In addition, an almost equal amount of perishable foodstuffs came in by boat and truck. About 3,500,000 tons of coal are sold annually at retail in Manhattan alone. This great volume of bulk cargo is moved through 28 yards by waterfront barge deliveries from terminals located in New Jersey.

On the basis of a minimum requirement of 90,000 square feet of shedded wharf area per ship to assure maximum efficiency of ship and pier operation, the Port of New York now has 129 Class A shedded berths. The Port has 88 Class B shedded berths of less than 90,000 square feet but more than 45,000 square feet each. Ninety-one of the Class A berths and 68 of Class B are used by commercial shipping. The City of New York and the Port Authority own 68 Class A berths and 45 Class B.

Traffic Relief for the New York Waterfront

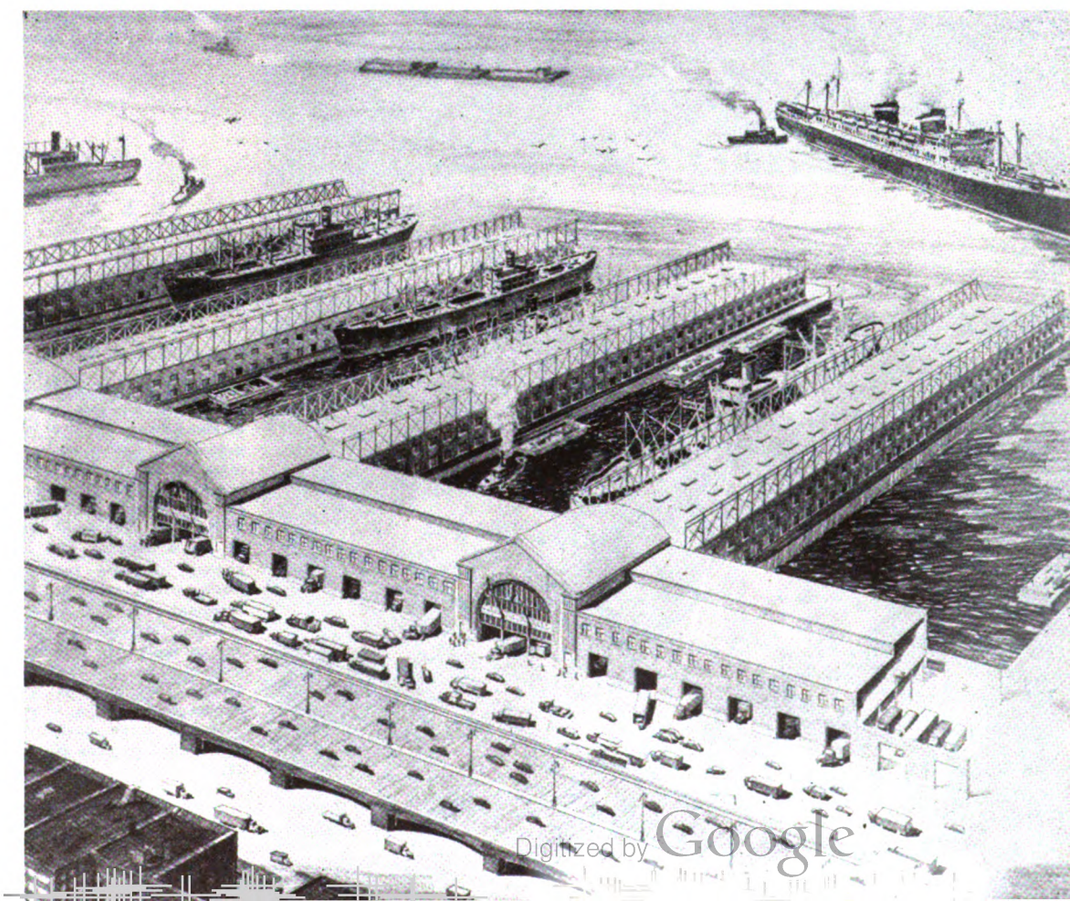
The provision, under the Port Authority's pier improvement program, of some 1,700 truck back-up spaces to accommodate 5,000 trucks a day entirely within pier structures, the widening of piers, and the general increase in efficiency of loading and unloading operations at the waterfront facilities, will greatly relieve the truck and through-traffic congestion on the Manhattan and Brooklyn waterfronts which today is costing shippers about $8,750,000 a year. In addition, the Port Authority will provide a self-supporting paved parking area adjacent to the union produce terminal that will accommodate 300 cars at one time.

Each of the 1,700 truck berths may be used three times in the period it now takes a single truck to enter a pier, pick up or discharge its freight, and find its way out of the pier and through the traffic jam.

New piers will have typical widths ranging from 200 to 300 feet. They will have ample truck berths within the structures, or in recessed berths at the

CHELSEA PIERS, shown at left in their present congested condition, will be modernized to look as they do in the picture below. Their bulkhead sheds will be deepened to 95 feet, and electric cargo hoists for handling cargo between the first and second decks will be installed.

The second deck of the bulkhead sheds will provide space for handling cargo hoisted from trucks below. Back-up spaces for 146 tractor-trailer units, or 228 medium-sized trucks, will serve the seven piers clear of the marginal way.



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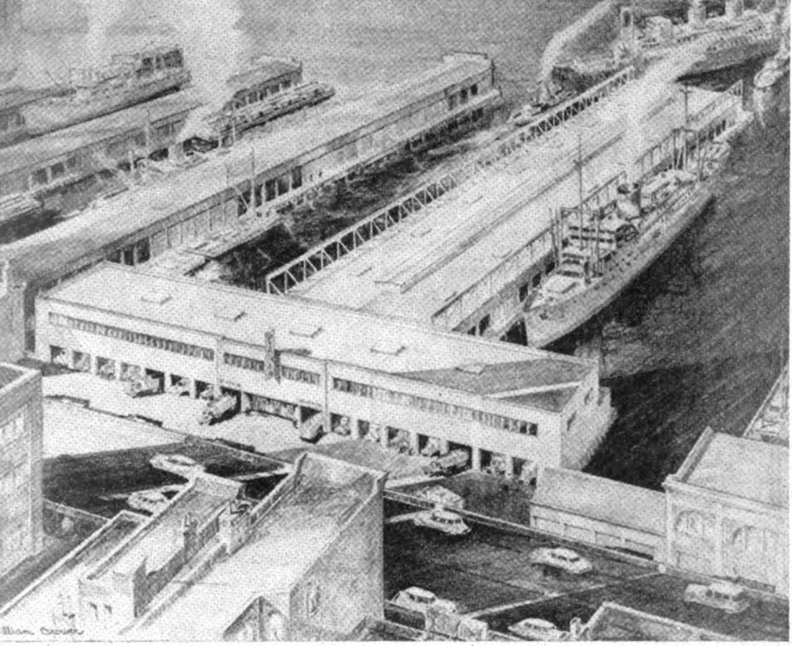
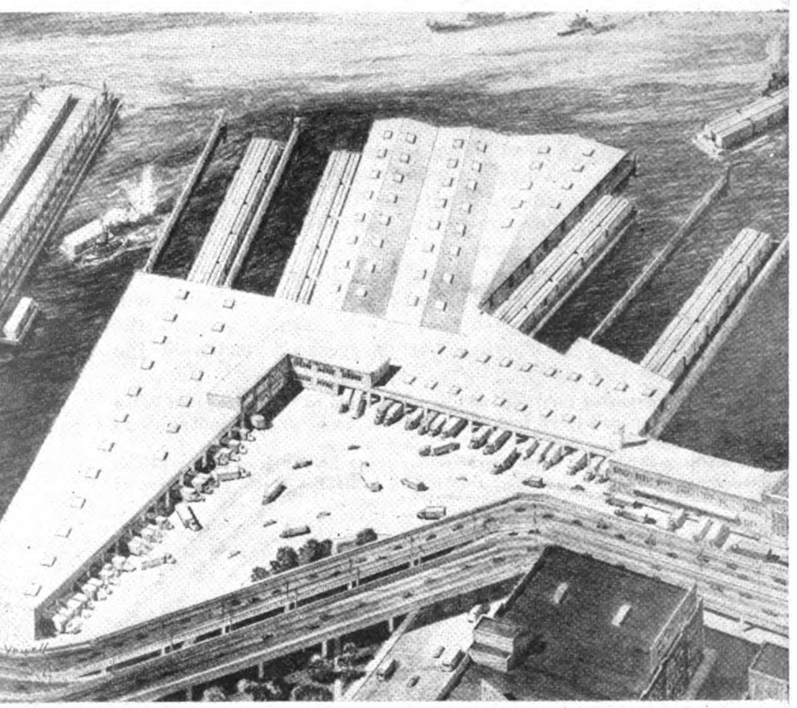
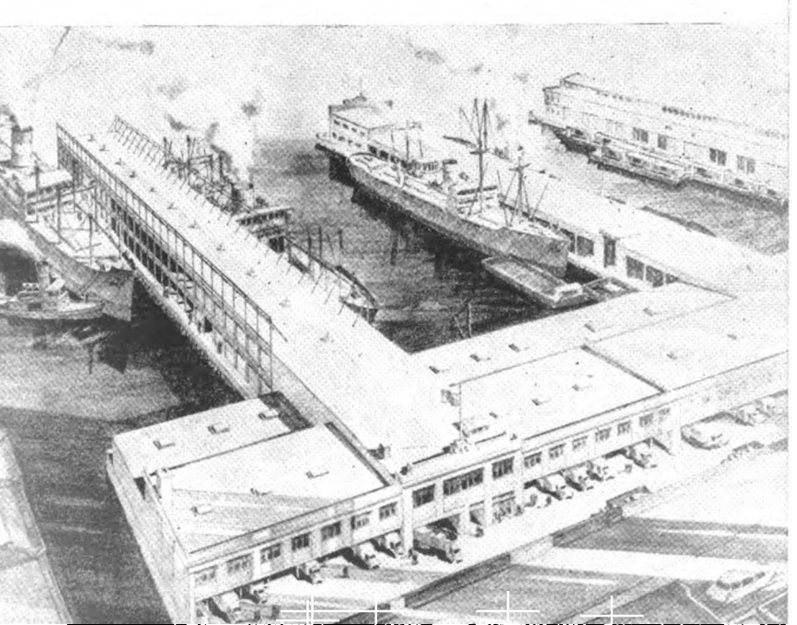


NEW PIER 40, NORTH RIVER—A single-deck, two-berth pier with a two-deck bulkhead shed designed particularly for coastwise shipping, but readily adaptable to offshore operation, will replace two worn out structures. The new pier will cost $5,715,000. It will be wide enough to accommodate a 20-foot wide truck boulevard with separate entrance and exit, and will have working space for 45 trucks and 100,000 square feet of net cargo area. The bulkhead wings will provide loading and unloading space for 30 trucks in recessed berths. Face of new structure will be set back approximately 50 feet from existing bulkhead line.



23RD STREET UNION RAILROAD CARFLOAT STATION—This station, with an annual capacity of 500,000 tons, will cost $5,815,000 to build. With a total of 144,000 square feet of net cargo space, the station will have 50 truck spots on the central wharf, and 34 on the bulkhead platform. There will also be 51 recessed back-up spots at the face of the building, which will be set back 25 feet from existing bulkhead line so that trucks will be clear of the marginal way. A second deck provides 10,000 square feet of office space.



MODERNIZED PIERS 45-52, NORTH RIVER—This sketch of Pier 45 shows typical improvements to be made to piers 45 to 52. The bulkhead shed will be deepened from its present 50 feet to 95 feet, and the front face of the headhouse will be opened to allow recessed truck spaces, relieving the marginal way of parked vehicles. This modernization will provide 176 recessed truck spaces for the pier group. Electric hoists will handle cargo to the second deck and cargo masts will be installed on piers 50 and 51.

bulkhead to minimize waiting lines. Similar truck berths will be provided at the union produce terminal and at the four union carfloat stations. Twenty-foot wide U-shaped roadways within piers, with adequate turning space at the pier ends, will allow the unrestricted movement of trucks entering at one point and exiting at another. In Brooklyn, a new pier will have a truck ramp leading to the second deck.

The pier modernization program will include the opening at intervals of the facades of those piers which range from 100 feet to 130 feet in width. It will also provide for the deepening of wing bulkheads. In this manner from 16 to 28 trucks will be handled at each bulkhead in berths completely off the Marginal Way. Double-deck piers will have the added advantage of hatches and high-speed electric hoists above each of the bulkhead loading berths to expedite the movement of cargoes between decks.

Union Produce Terminal

To fill a long-felt, critical need for a great central perishable food market, the Port Authority will construct the world's largest union produce terminal on the Hudson River waterfront in Manhattan at a cost of $27,500,000. The terminal will assure a $9,000,000 savings in Metropolitan New York's food bill. A self-supporting facility, it will earn an estimated annual revenue of $665,000. Both cost and revenue figures include a $1,500,000 parking area adjacent to the produce terminal.

The terminal, and the adjoining parking facility, will help eliminate the intolerable street congestion in the present Washington Street Market area. It will be ready for partial operation in 1953, and for full operation in 1955.

The terminal structure will extend 2,320 feet along West Street from Duane Street to Watts Street, between present Piers 22 and 30. With a depth of 625 feet, it will comprise 32 acres of shedded hall for receiving and distributing the 1,250,000 tons or 140,000 carloads of fresh fruit and vegetables moved by rail, boat and truck that seek a central metropolitan market here annually. The great terminal is capable of displaying 1,100 carloads of produce. Exclusive of finger piers, it will occupy ten times the ground area of Madison Square Garden under a 1,500,000-square-foot roof. Facilities will be available for the sorting and consolidating of produce at 434 buyers' truck berths.

To the south of the produce terminal and combined with it structurally, will be a 595-foot long and 625-foot deep union carfloat railway station with a shedded area of 372,000 square feet. This station will occupy the space presently devoted to Piers 19 to 21. Serving the produce terminal will be 4½ shedded piers with an area of 136,000 square feet, and a single open-deck pier with an area of 54,000 square feet. The carfloat railway station will be served by 2½ shedded piers with an area of 55,000 square feet.

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The carfloat station will operate as a railroad station for non-perishable freight. At waterfront and streetfront of this railroad station, trucks and carfloats handling produce can be accommodated during peak night activities in the produce terminal.

Need for Produce Terminal

Most of the piers at the produce terminal site are now leased by the railroads for delivery of fresh fruits and vegetables. To the extent that it is feasible, physically and economically, these piers will be incorporated into the produce terminal.

The unique structural and management features of the produce terminal will fill two of the most urgent needs for the improvement and modernization of produce handling in the Port of New York. First, they will provide for efficient and economical receipt and distribution of foodstuffs in the world's greatest consuming area. Secondly, they will furnish traffic relief in the most heavily congested streets in the Port District.

The face of the giant terminal building will be 40 feet behind the present bulkhead line. This widening of the Marginal Way in the market area will greatly relieve traffic.

A net cargo area of 513,000 square feet will provide 466 square feet for each carload of produce. The boulevard and cross aisle areas together with space between produce lots and truck-berth space, account for 937,000 square feet of the floor.

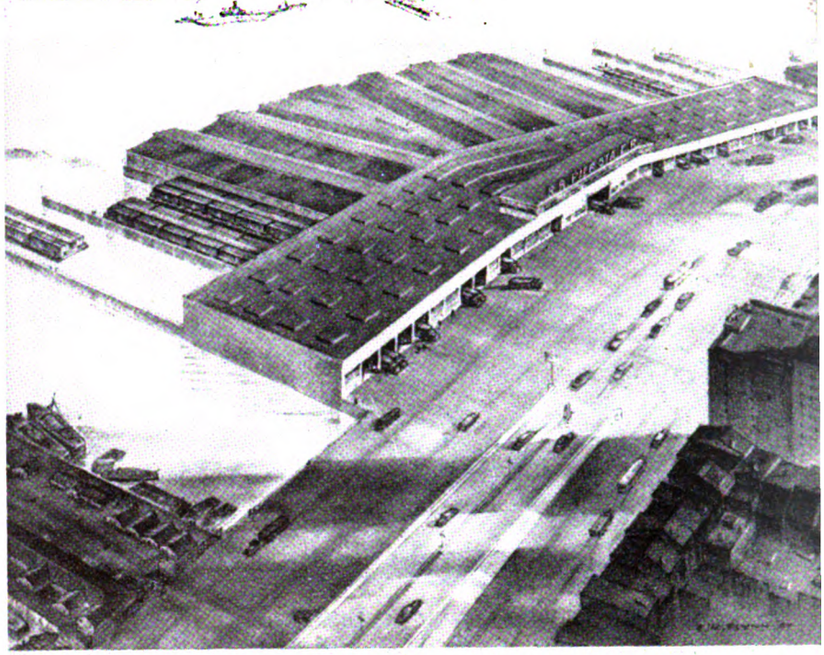
The union produce terminal will have 434 truck back-up spaces. One hundred forty-eight of these truck back-ups are at the street face, entirely inside the existing bulkhead line. These spaces are immediately adjacent to 26 similar truck back-ups in the contiguous railway terminal. There are 210 additional truck back-ups in the produce terminal building, 50 of which are on the so-called southern aisle. The remaining 50 spaces are provided on the northern platform, outside the shedded area.

On the waterfront, Piers 25, 26, 27, 28 and 29 will be incorporated into the new terminal facility, both structurally and operationally. Between these piers, tie-up racks for carfloats will be provided. These racks and the existing piers will furnish 36 efficient carfloat berths.

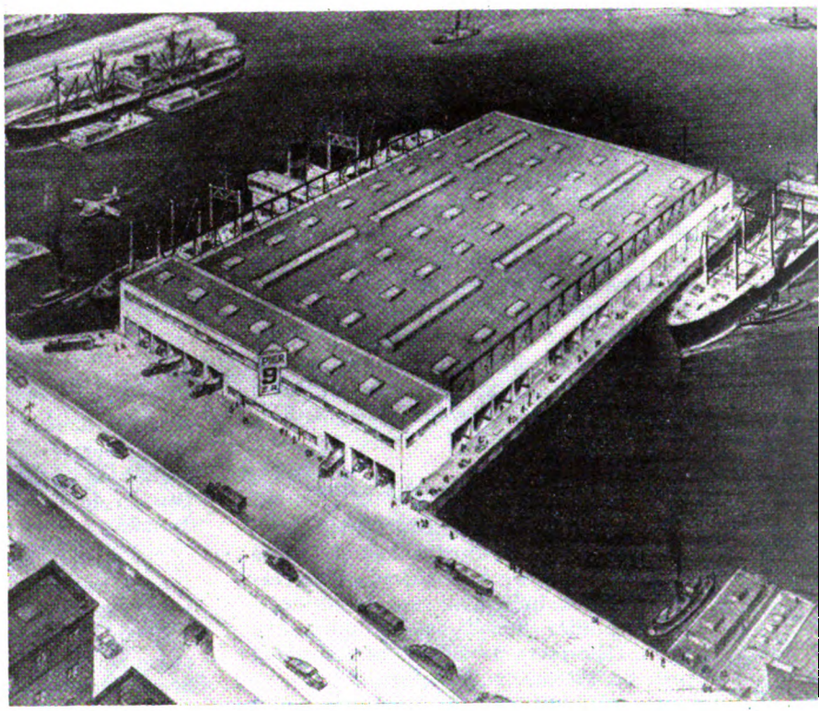
Union Railroad Carfloat Stations

The Port Authority will provide four strategically-located union railroad carfloat stations on the New York City waterfront. To be built at a total cost of $27,500,000, the stations will handle 2,000,000 tons of railroad non-perishable carload freight a year at an estimated saving of $1,640,000 to carriers. Construction of the union stations will permit a reduction of 820,000 square feet in the occupancy of existing New York City waterfront facilities, making such space available for needed pier improvements.

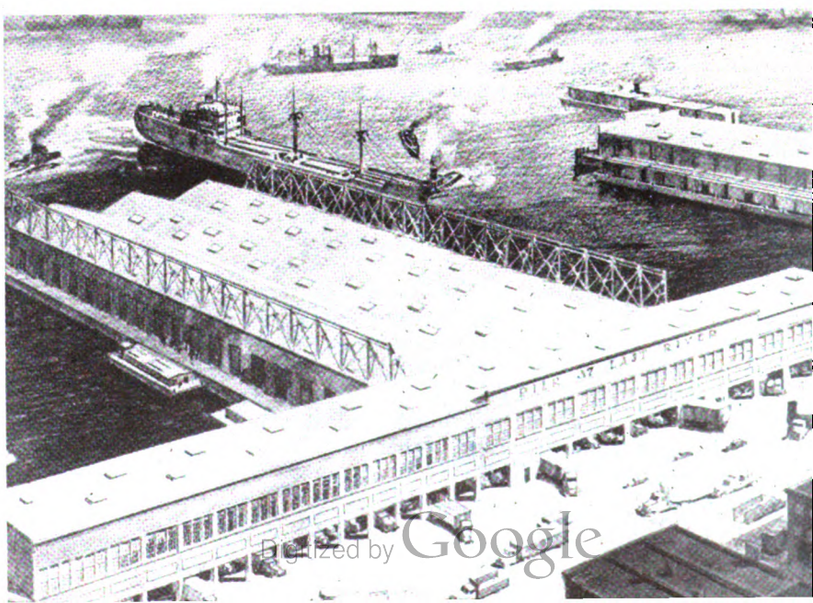
The new stations will provide a total of 32 carfloat berths and 807,000 square feet of net cargo area, for handling in the most efficient and economical way possible the 70,000 cars of railroad freight



EAST RIVER UNION RAILROAD CARFLOAT STATION—This carfloat station will handle 2,000 tons daily and will cost $9,215,000. It will accommodate 8 carfloats and a total of 242,000 square feet of net cargo space will be provided, with 96 truck spots. An additional 62 truck spots will be available at the bulkhead, which will be 75 feet behind the existing bulkhead line. 10,000 square feet of office space will be provided on second deck.



NEW PIER 9, EAST RIVER—A single-deck, two-berth general cargo pier will be built over present piers 9 and 11. The new pier will extend 338 feet along street front, set back 75 feet from present bulkhead line, and will cost $3,540,135. The pier deck will be wide enough to permit a 20-foot wide U-shaped truck boulevard. There will be working space for 30 trucks, and 110,000 square feet of cargo area. In addition, 8 back-up spots will be provided in recessed berths at the new bulkhead.



NEW PIER 37, EAST RIVER—A single-deck, two-berth general cargo pier designed for medium sized coastwise vessels will be built at a cost of $1,903,000. Wide enough to permit a 20-foot wide truck boulevard with separate entrance and exit, the pier will have working space for 25 trucks, and will provide 51,000 square feet of cargo space. In addition, 32 recessed back-up spots will be furnished at the bulkhead in a new 50-foot wide by 100-foot long double-deck bulkhead wing on the downstream side, and in the existing 50-foot by 225-foot bulkhead shed on the east side.

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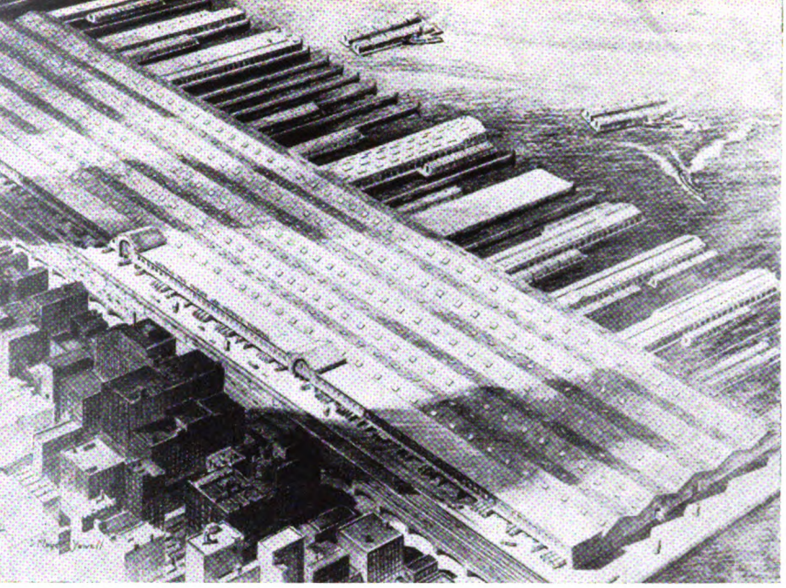


WORLD'S LARGEST UNION PRODUCE TERMINAL — This terminal, to be built at a cost of $26,000,000, will extend 2,320 feet along West Street from the present Pier 22 to Pier 30, inclusive. It will be 625 feet wide with 32 acres of over-water shedded area and, exclusive of finger piers, will occupy ten times the ground area of Madison Square Garden under a 1,500,000-square-foot roof. The produce terminal is combined at its southern end with a 595-foot-long union railway carfloat station.

that will annually seek service here. This is exclusive of the 75,000 cars of fresh fruits and vegetables that also enter by rail and that will be handled at the union produce terminal. Nor does it include the 625,000 tons of less-carload freight handled annually through the Manhattan pier stations.

Three of the union stations will be located on the Hudson. One will be immediately south of the union produce terminal, and will be structurally a part of it, on the site now occupied by Piers 19, 20, and a part of 21. The second will be located at the foot of Thirty-third Street on the waterfront now occupied by two obsolete piers, 72 and 73. The third will replace the abandoned Twenty-third Street Ferry terminal, and Chelsea Pier 62, a one-sided steamship berth.

The fourth station will be on the East River, and will extend from Broad Street to Old Slip, on the site of Piers 4, 5, 6, 7 and 8.

Need for Union Carfloat Stations

The new union carfloat stations will meet an urgent need of commerce in the Port of New York by replacing the present scattered, individually-operated terminal facilities which occupy thirty-five piers. The piers provide a total shedded area of 2,448,000 square feet.

Although the population and industrial activity of the metropolitan area have shown a consistent upward trend over the past several years, there has been a slight decrease in carload rail freight, and a substantial drop in less-carload rail freight in this area.

This phenomenon is explained by two facts. First, there has been a heavy shift to merchandise freight haulage by motor truck over-the-road from interior points. There has also been an increase in the volume of freight carried by terminal trucks handling less-carload railroad freight in store-door pickup and delivery from concentration points off the waterfront. Second, freight forwarders have effectively promoted the consolidation of less-carload shipments into mixed carloads shipped as carload freight by the railroads.

The new union railroad carfloat stations will also be able to handle railroad less-carload freight not accommodated by direct trucking between railheads and store-door or off-line concentration terminals such as the Union Terminal Freight Station located in the Port Authority Building.

The less-carload freight diverted from the railroads to over-the-road trucks, with the exception of fresh fruits and vegetables, no longer requires delivery space on the waterfront. It will be handled efficiently at inland union motor truck terminals such as those now under construction by the Authority—one in Manhattan between Washington and Greenwich Streets near the Holland Tunnel, and the other in Newark.

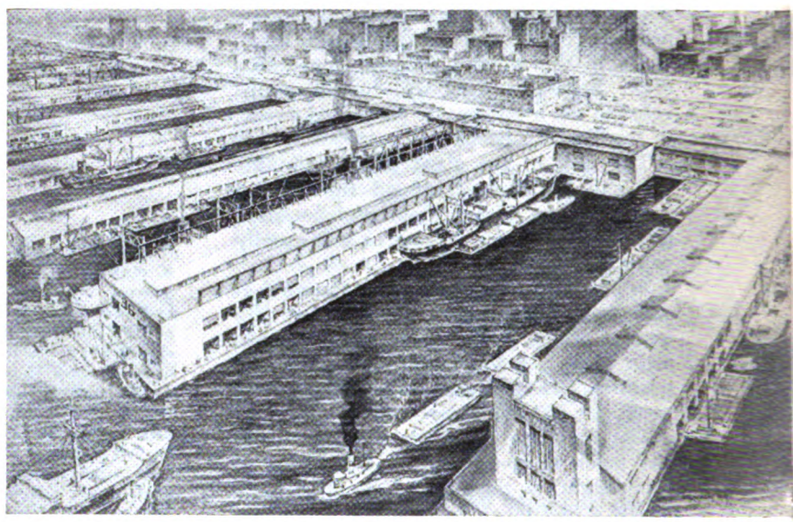
Modernization of Steamship Piers

The Port Authority proposes to modernize and rehabilitate 14 Hudson River piers between West Tenth Street and West Twenty-first Street in Manhattan at a total cost of $16,434,952. This modernization program will improve the cargo handling facilities at the piers and relieve the street traffic congestion along the waterfront. Three Class A berths will be added to the 18 now available at these piers.

Cargo handling capacity of the piers will be increased by over 40 per cent, and cargo handling will be expedited by the installation of new hatches and hoists. Out-of-date freight elevators will be removed and stairs and escalators will be relocated. Unnecessary partitions on the ground floor of bulkhead sheds will be removed and new rolling doors will be installed at back-up spaces. New passenger entrances will be provided at each pier.

Bulkhead sheds will be improved with the most modern and durable construction materials. They will be enlarged to a uniform depth of 95 feet from the present street face, as compared with present depths that range from 50 to 75 feet. Fire prevention devices will be installed throughout.

The improved piers will provide back-up berths for 322 large tractor-trailers or 404 city delivery trucks. In addition to increasing the efficiency of cargo handling at the piers, the handling of trucks inside the pier structures will clear two traffic lanes on the Marginal Way which is badly congested at this point.



NEW PIER 36, NORTH RIVER—A double-deck, three-berth, general cargo pier, for passenger and freight operations, to be built at a cost of $8,473,000. It will have bulkhead wings which will accommodate 18 trucks, and a 20-foot truck boulevard with working space for 62 trucks on first deck. Nineteen hatchways serviced by 3-ton electric hoists will handle cargo between first and second decks.

Rehabilitation of Steamship Piers

The Port Authority proposes to rehabilitate 56 piers and wharves at a total cost of $10,717,000. Twenty-three of these facilities are on the Hudson River and 12 on the East River in Manhattan, six in Brooklyn, 13 on Staten Island, one in the Bronx, and one in Queens.

In general, the rehabilitation program will include the restoration of weakened substructures and fender systems, the repair of decks, roofs, siding and doors, and painting. Water supply and electrical systems will be rehabilitated and fire protective devices will be installed.

Fire Protection

The Port Authority proposes to install fire protection and prevention devices on the New York piers at a cost of from $75,000 to $100,000 for each pier. (See The LOG for November, 1947, Page 35). These installations will conform to recommendations of the New York Board of Fire Underwriters, the New York Fire Insurance Rating Organization, the National Board of Fire Underwriters, and other experts. The principal features of

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these recommendations are:

1. Installation of dry-pipe sprinkler and stand-pipe systems.
2. The construction of fire-resistant walls at 140-foot intervals in the substructure under the deck, provided with dry-pipe sprinklers on both sides.
3. The provision of permanent manholes in the decks between each pair of these fire walls, permitting fire fighters with hoses to reach the underdocks of the piers.
4. The provision of nozzle openings in the decks on 25-foot centers to allow the use of revolving nozzles for fighting underdeck fires.
5. The construction of non-combustible truss curtains at 100-foot intervals, extending from the bottom chords of the roof trusses to the roof itself. This will concentrate the hot air and flames into an area immediately above the fire in order to accelerate the action of the sprinkler heads and prevent mushrooming of hot gases.

The hazard of underdeck fires at all new projects will be further reduced by the use of steel or concrete piles. Any timber piling used in new construction will be creosoted for increased fire resistance.

The annual carrying charges of from $5,000 to $6,000 a year on the capital cost of these protective devices will be more than offset by a reduction in insurance premiums by at least a dollar for each $100 valuation. At an average valuation of $1,000,000 for each pier, the reduction in annual premiums will amount to $10,000.

The Port Authority will itself insure piers operated on a preferential berthage or an open berthage arrangement. It will also insure the union produce terminal. Lessees having exclusive occupancy of property will be required to carry insurance consistent with reproduction costs.

In the fifteen years from May 1932 to June 1947, eleven major New York waterfront fires caused the loss of 34 lives and $15,000,000 in property values.

Marine Borer Protection

Port Authority consultants have concluded that for the next two decades, at least, destruction of subsurface piling by such marine borers as the Teredo Navalis (shipworm) and Limnoria (a minute crustacean), is not likely. Destructive borers are known to exist in substantial numbers at the City Island entrance to Long Island Sound and at the Narrows. A report of January 8, 1948, shows a severe attack of marine borers just inside the Narrows on the Staten Island shore.

In studying the marine borer problem the Port Authority has had available records gathered over a period of 8 years from test-board installations maintained at about 40 points in the New York Harbor under the direction of the Marine Borer Research Committee. During this period some 8,000 test panels have been examined and checked for 30 types of marine borers and associated organisms. These test panels have been analyzed by Dr. William Clapp, of Duxbury, Massachusetts, one of the best known authorities on marine borers.

Monthly test-board analyses will be maintained in the Port as a borer warning service. The use of steel or concrete piling, and the creosoting of wood piles in new construction, will further protect the harbor from possible attack by the borers.

It is believed that sewage and industrial waste in the harbor waters have minimized the presence of borers here. As a result 95 per cent of the piling in municipal piers is not at present treated to resist the parasites.

Additional Graphs and Charts on pages 32 and 33.

TABLE 1

PIER MODERNIZATION

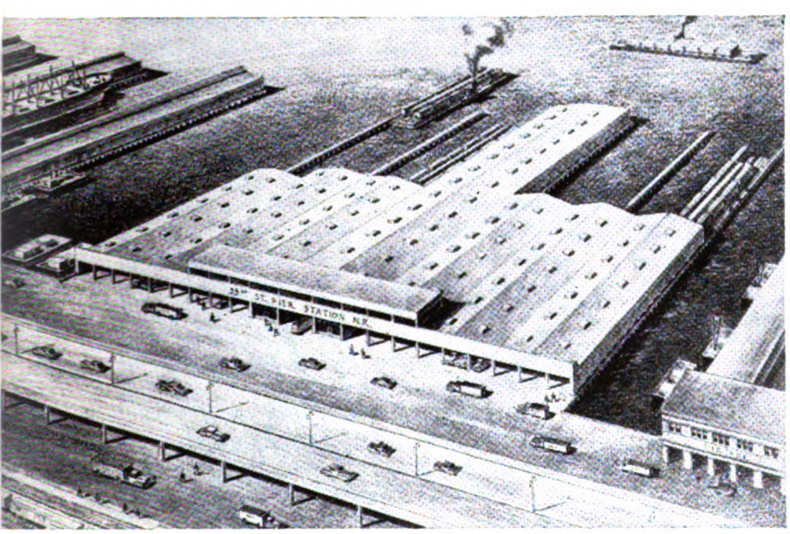
Pier	Estimated Modernization Cost	Estimated Rehabilitation Cost	Total Estimated Cost
45	$ 815,812	$ 46,765	$ 862,577
46	853,046	72,294	925,340
48	676,305	419,433	1,095,738
49	1,145,374	507,257	1,652,631
50	1,364,590	395,895	1,760,485
51	1,362,458	494,963	1,857,421
52	653,361	415,334	1,068,695
53	257,111	413,182	670,293
54	523,710	266,217	789,927
56	584,430	641,939	1,226,369
58	584,430	655,363	1,239,793
59	584,430	652,371	1,236,801
60	465,520	581,308	1,046,828
61	327,635	674,419	1,002,054
	$10,198,212	$6,236,740	$16,434,952

Lloyd's Reports on World Shipbuilding

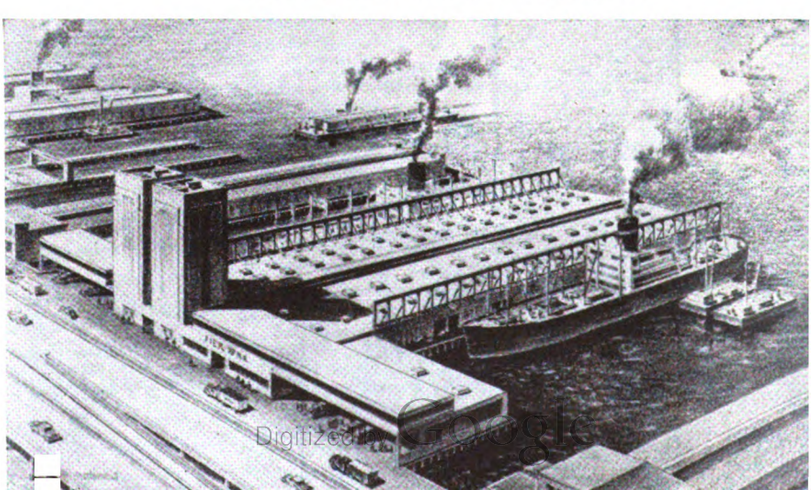
Although nine of the eleven leading maritime countries of the world launched a considerably greater tonnage of merchant vessels last year than they did in 1946, the combined world output for 1947 showed a slight decrease, according to a yearly review of launchings just issued by Lloyd's Register of Shipping. The review includes all merchant vessels of 100 gross tons each and upwards, excluding only such countries as Russia, Japan and Germany, for which returns have not been available.

For 1947, Lloyd's Register states, the merchant shipping launched aggregated 2,111,886 gross tons, as against 2,127,000 tons in 1946. The only countries to report declines were Spain, with a loss of 30,600 tons, and the United States, where the output fell off 336,400 tons. The greatest gain, one of 75,700 tons, was made by Sweden, followed by Great Britain and North Ireland, with 68,779 tons and France, with 68,706 tons. Holland showed an increase of 54,500 tons; the British Dominions one of 43,700; Denmark, 21,600; Belgium 8,700; Norway 2,400; and Italy 500 tons.

How the tonnage launched in Great Britain and North Ireland, the United States and all the other maritime coun-



33RD STREET UNION RAILROAD CARFLOAT STATION —This station will have a daily capacity of 2,000 tons of non-perishable carload freight. Berthing 8 carfloats, it will provide inside back-up space for 74 trucks, and bulkhead back-up space for 36 trucks. The face of the building will be 75 feet back of the present bulkhead line, keeping the marginal way clear of all standing trucks.



NEW PIER 79, NORTH RIVER—This pier will provide 239,000 square feet of shed-enclosed area, and will span and protect the Lincoln Tunnel directly beneath. The inside pier area includes a U-shaped traffic roadway and spaces for 39 trucks. Space for 23 additional trucks is provided at the bulkhead, in the recessed area facing the street.

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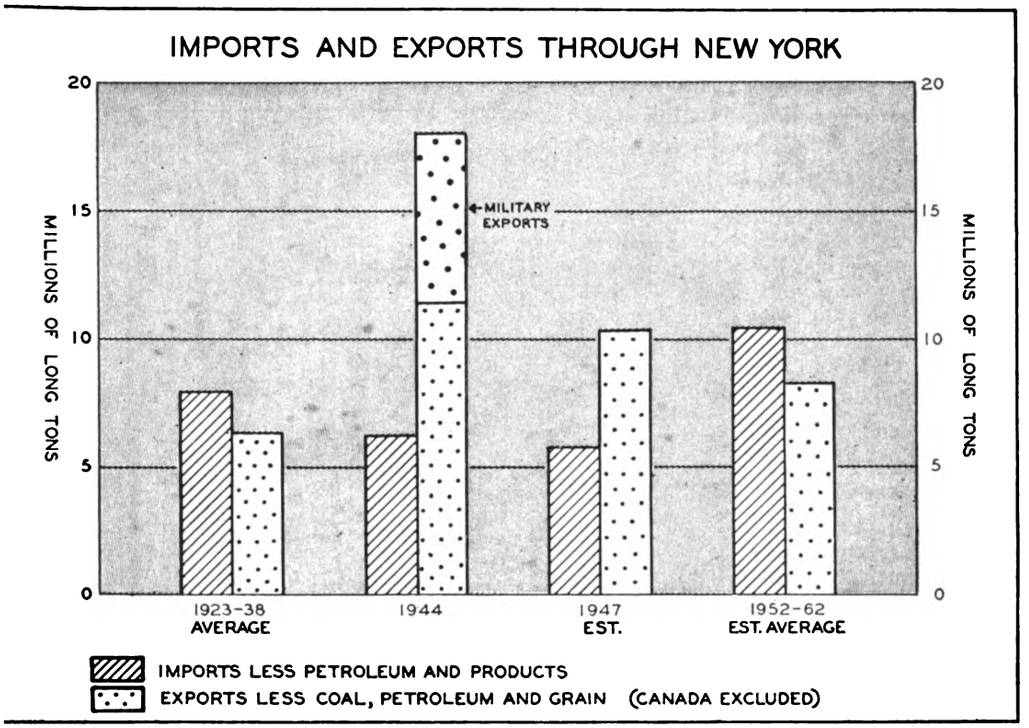


tries reporting, taken as a group, has compared in the last two years, is shown by Lloyd's Register in the following table, the figures representing gross tons:

	1947	1946
Great Britain and North Ireland	1,202,024	1,133,245
United States	164,848	501,294
Other Countries	745,014	492,882
	2,111,886	2,127,421

Tonnage launched in the United States in 1947 included 80,122 gross tons built on the Atlantic Coast, 2,753 tons on the Great Lakes, and 74,986 tons at Gulf ports.

British and U. S. Comparison

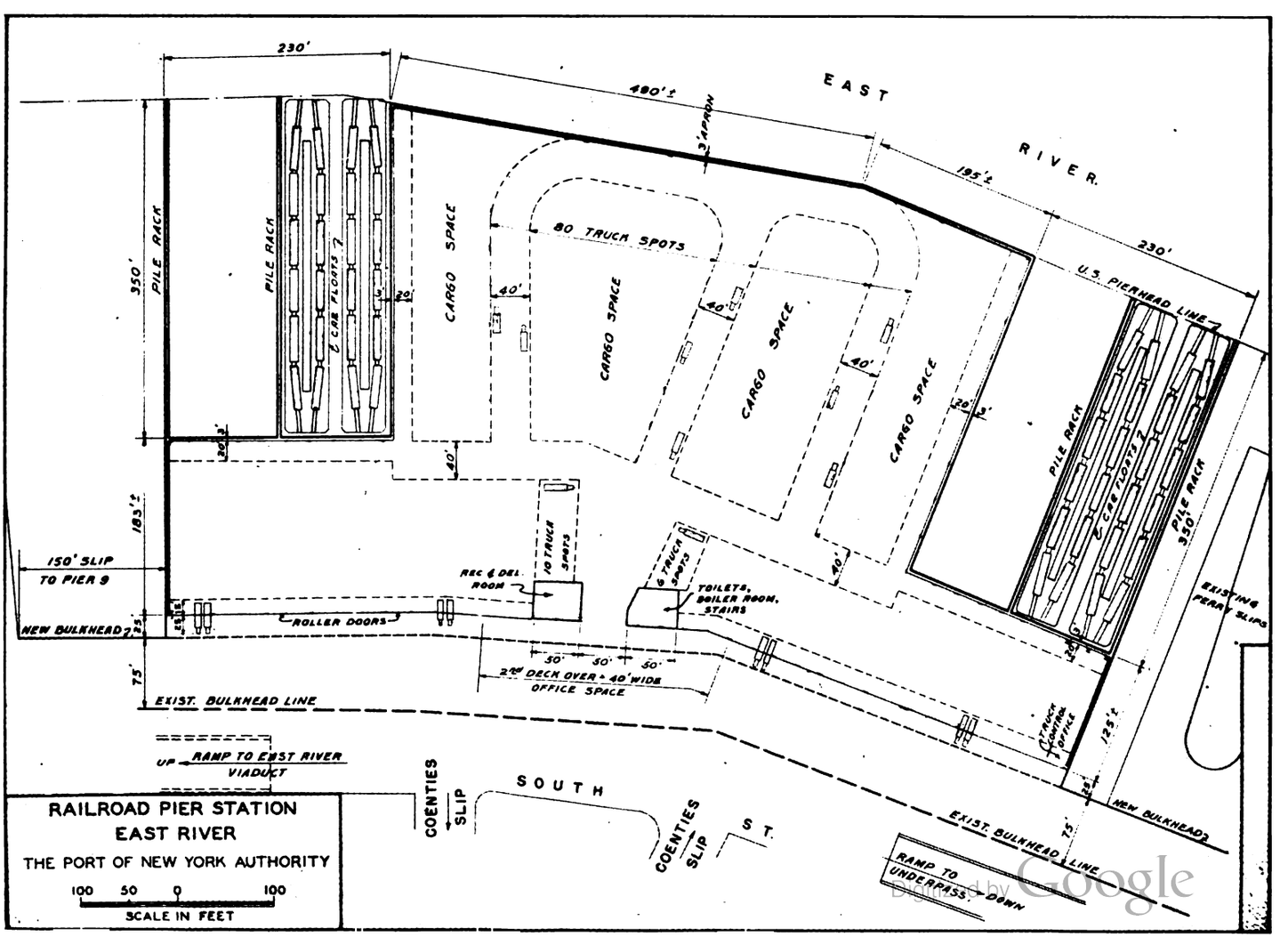
During 1938, the last pre-war year, Lloyd's Register points out, the United States launched about one ton of merchant shipping for every five tons sent down the ways in Great Britain and Northern Ireland. During the war years, 1939-1945, the United States launched far more shipping than any country. In 1945, more than 6 tons were produced in the United States to one in Great Britain and Northern Ireland. In 1946, however, British tonnage launched was more than double the American figure, and last year it was over seven times the total for the United States.

Of the 2,111,000 gross tons of merchant vessels launched throughout the world in 1947, an aggregate of 1,292,377 tons was constructed under the supervision of Lloyd's Register, and intended for classification with that Society. Lloyd's Register, therefore, supervised 61.2 of the entire tonnage launched last year.

Motor Vessels Increase

Motor vessels of all types, launched last year, showed an increase of 246,000 gross tons, or about 25% over the 1946 total. Launchings of all other types of vessels, combined, had a decrease of about 262,000 tons in the same period. About 55% of all the tonnage launched last year was motorized, compared with 43.5% in 1946.

Great Britain and Northern Ireland continue to lead in motorship output, with a gain of 32,000 tons over the 1946 figure. Sweden shows an increase of 83,000 tons; Holland 40,000; France nearly 50,000; and Denmark 35,000. The British Dominions report a gain of 8,000 tons, the United States 21,000, and Belgium one of 12,000. Declines of 4,200 tons are shown for Italy; of 7,400 tons for Norway, and of 20,000 tons for Spain. Lloyd's Register shows the comparison for motorship output for the past two years in the



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following table of gross tonnage:

	1947	1946
Great Britain and North Ireland	562,656	529,756
Sweden	218,798	135,289
Holland	74,217	33,290
France	63,481	13,557
Denmark	60,695	25,523
Italy	54,397	58,642
British Dominions (including Canada)	44,083 (41,502)	35,414 .....
United States	39,189	17,897
Belgium	25,577	13,511
Norway	12,532	19,927
Spain	8,692	28,913

Motorships of all types launched during 1947 aggregated 1,168,584 gross tons, as compared with 921,619 tons in 1946; while all other types of vessels combined, launched in 1947 totaled 943,302 tons, as against 1,205,802 tons in 1946.

Ninety-two steamers and motorships of 6,000 to 9,999 tons each were launched throughout the world last year. Of these, 49 were launched in Great Britain and Northern Ireland. Twenty-two steamers and motorships of 10,000 gross tons and above were launched during the year in Great Britain and Ireland; 5 in Sweden; 2 in Denmark and 1 each in the United States and France.

Tanker Launchings

The total tonnage of oil tankers (steamers and motorships of 1,000 tons gross each and above) launched during last year throughout the world was 308,292. Of this, 132,661 tons was produced in Great Britain and Northern Ireland; 23,013 in France; 22,365 in the United States; and 4,000 in Canada.

For motor tankers (of 1,000 tons gross and above) launched during 1947, the world production was 242,078. Of this, 99,141 tons were produced in Great Britain and Northern Ireland; 108,622 in Sweden; 16,684 in France; 10,131 in Denmark; and 7,500 in Italy.

Vessels fitted with steam turbines launched during 1947 in the world aggregated 536,275 gross tons. Of these, 372,690 tons were produced in Great Britain and Northern Ireland; 124,706 in the United States; 6,329 in France, and 3,100 in Italy.

Vessels fitted with a combination of reciprocating engines and turbines launched during the year in the world totaled 95,589 tons. Great Britain and Northern Ireland's share of this output was 59,639 tons; Holland's 11,990; the British Dominions 10,714 and Norway 9,696.

Sailing vessels and barges launched in Great Britain and Northern Ireland during 1947 aggregated 9,265 tons.

Foreign Registration

Considerable tonnage was launched during 1947 for registration in countries other than those constructing the ships. This included 380,153 in Great Britain and Northern Ireland; 124,978 built in Sweden; 124,854 in the United States; 81,513 in Canada; 28,356 in Denmark; 22,177 in Italy, and 16,378 in Holland.

The countries of registration are indicated in Lloyd's Register's returns. There were built in 1947 for registration in Norway, 228,686 tons of shipping; for France 197,777 tons; for Brazil 86,620 tons; for Portugal 56,981 tons; for the British Dominions 50,753 tons, and for Panama 38,024 tons.

The largest vessel launched in the world during 1947 was the CARONIA, constructed in Great Britain and Northern Ireland, with a gross tonnage of 34,000.

Comparing the launching of all types of shipping during 1946 and 1947, Lloyd's points out that Great Britain and Northern Ireland continue to lead all countries; but there have been a number of changes in the relative output ranking of the other maritime countries. Great Britain and Northern Ireland's lead over their nearest competitor which was 986,000 tons in 1946, is now 980,000 tons. Sweden now occupies second place as compared to third in 1946. Her lead over the United States is 57,000 tons; while the United States, second in 1946, and now third, leads the British Dominion by 35,000 tons, the Dominions retaining fourth place, and leading fifth place France by 37,000 tons. France, which was tenth in 1946, now leads Holland by 4,000 tons, Holland having advanced from ninth to sixth place. In seventh place comes Italy, which was fifth in 1946, and now leads eighth place Denmark by 1,500 tons. Denmark, which has dropped from seventh place in 1946, is 23,000 tons ahead of ninth place Norway, which was eighth in 1946. Norway, in turn, leads tenth place Belgium by 10,700 tons. Belgium, which stood eleventh last year, is 15,500 tons ahead of last-place Spain, which has fallen from sixth place to eleventh.

Port of New York's Plan For The Future

TABLE 2

Estimated Net Revenues From Marine Terminals Operations and Proposed Distribution of Surplus Based on 30 Year Bonds, 3 Per Cent (000 omitted)

	Net Oper. Rev.	Debt Service	Net Revenues	Payments to N.Y.C. Annual	Payments to N.Y.C. Accumulated	Retained by Port Annual	Retained by Port Accumulated	Marine Terminal Bonds Outstanding	Accumulated Debt Service on N.Y.C. Debt-Limit-Free Pier Bonds
1949	$ 5,164	$ 486	$ 4,678	$ 3,726	$ 3,726	$ 952	$ 952	$ 9,525	$ 2,435
1950	5,566	972	4,594	3,661	7,387	933	1,885	18,850	5,341
1951	5,975	1,458	4,517	3,605	10,992	912	2,797	27,969	8,247
1952	6,385	1,944	4,441	3,550	14,542	891	3,688	36,875	11,153
1953	7,485	2,430	5,055	4,187	18,729	868	4,556	45,563	13,799
1954	8,536	2,916	5,670	4,824	23,553	846	5,402	54,024	16,257
1955	9,686	3,402	6,284	5,461	29,014	823	6,225	62,254	18,333
1956	10,095	3,888	6,207	5,407	34,421	800	7,025	70,245	20,176
1957	10,505	4,374	6,131	5,357	39,778	774	7,799	77,990	21,636
1958	10,915	4,860	6,055	5,306	45,084	749	8,548	85,481	22,362
1959	11,324	5,346	5,978	5,255	50,339	723	9,271	92,711	22,706
1960	11,734	5,832	5,902	5,206	55,545	696	9,967	99,672	22,783
1961	11,734	5,832	5,902	4,427	59,972	1,475	11,442	96,831	
1962	11,734	5,832	5,902	4,427	64,399	1,475	12,917	93,904	
1963	11,734	5,832	5,902	4,427	68,826	1,475	14,392	90,889	
1964	11,734	5,832	5,902	4,427	73,253	1,475	15,867	87,784	
1965	11,734	5,832	5,902	4,427	77,680	1,475	17,342	84,686	
1966	11,734	5,832	5,902	4,427	82,107	1,475	18,817	81,494	
1967	11,734	5,832	5,902	4,427	86,534	1,475	20,292	78,206	
1968	11,734	5,832	5,902	4,427	90,961	1,475	21,767	74,819	
1969	11,734	5,832	5,902	4,427	95,388	1,475	23,242	71,330	
1970	11,734	5,832	5,902	4,427	99,815	1,475	24,717	67,737	
1971-89	222,946	78,732	144,214	108,160	207,975	36,054	60,771		
Total	$443,706	$174,960	$268,746	$207,975		$60,771			
Ave. for 41 yrs.	10,822	4,267	6,555	5,072		1,482			

TABLE 3

NEW PIER CONSTRUCTION

Pier	Location	Type	Estimated Construction Cost
North River			
19 to 21	Warren to Duane	Railroad Pier Station	$ 7,000,000
21 to 29	Duane to Watts Sts.	Produce Terminal	27,492,315*
36 & 37	Charlton Street	Double deck, general cargo, 3 berth	8,473,209
40 & 41	Clarkson Street	Single deck, 2 berth, Combination coastwise and general cargo	5,715,000
	23rd Street	Railroad Pier Station	5,815,157
	33rd Street	Railroad Pier Station	5,360,000
79	Over Lincoln Tunnel	Single deck, 2 berth general cargo	6,353,719
East River			
4,5,6,7,8	Coenties Slip	Railroad Pier Station	9,215,803
9	Foot of Old Slip East River	Single Deck, 2 berth General cargo and coastwise	3,540,135
37	Foot of Clinton St.	Single Deck, 2 berth General cargo	1,903,388
Brooklyn			
20	Atlantic Ave.	Double deck, 3 berth Combination general cargo and passenger	6,622,094
	Total Estimated Cost		$87,510,820
	Less Amount Pledged by Port Authority on Substructure of New Pier 79 Agreement Dated		600,000
	Net New Capital Outlay		$86,910,820

* Includes the cost of acquiring and preparing property for a proposed parking lot; estimated to cost $1,549,805.

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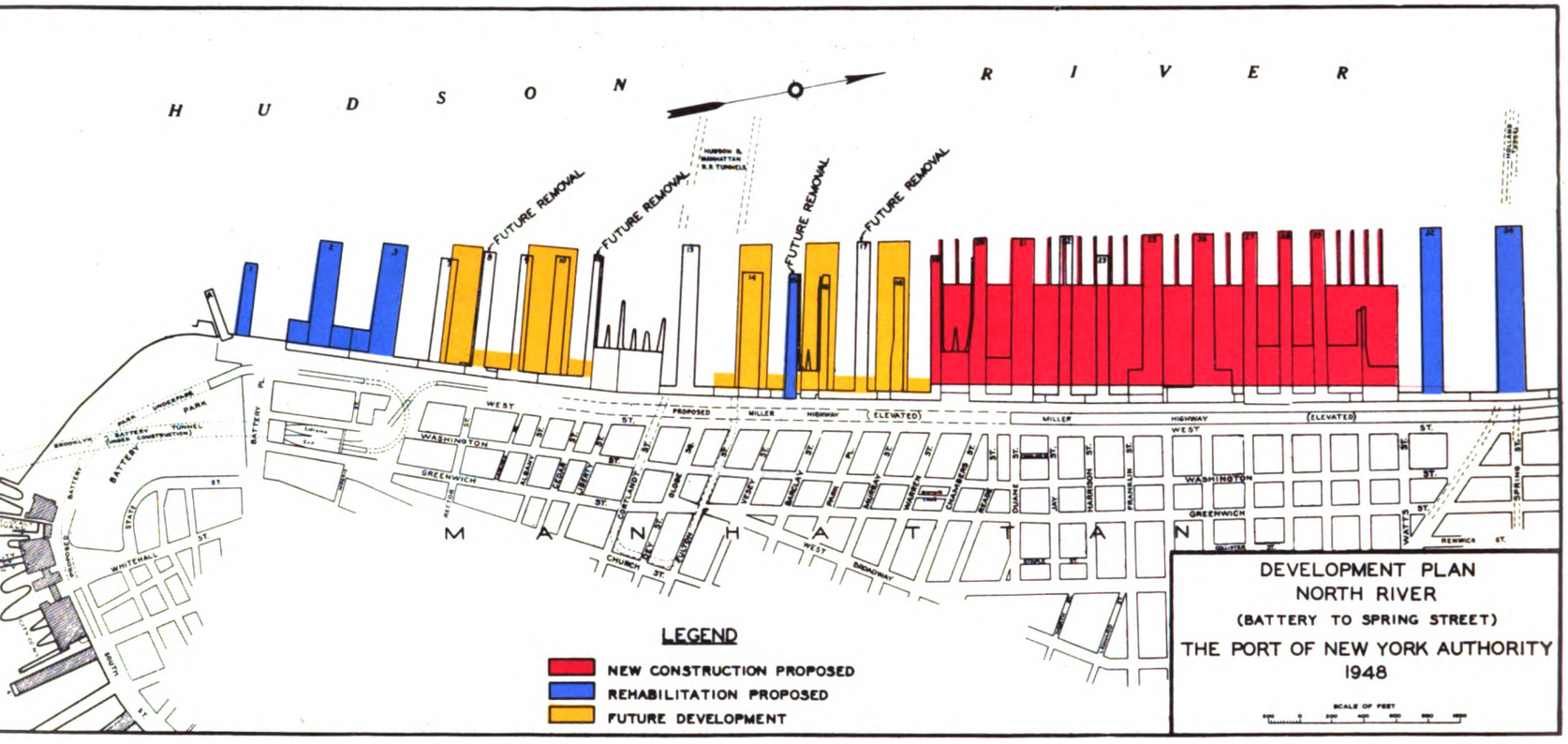
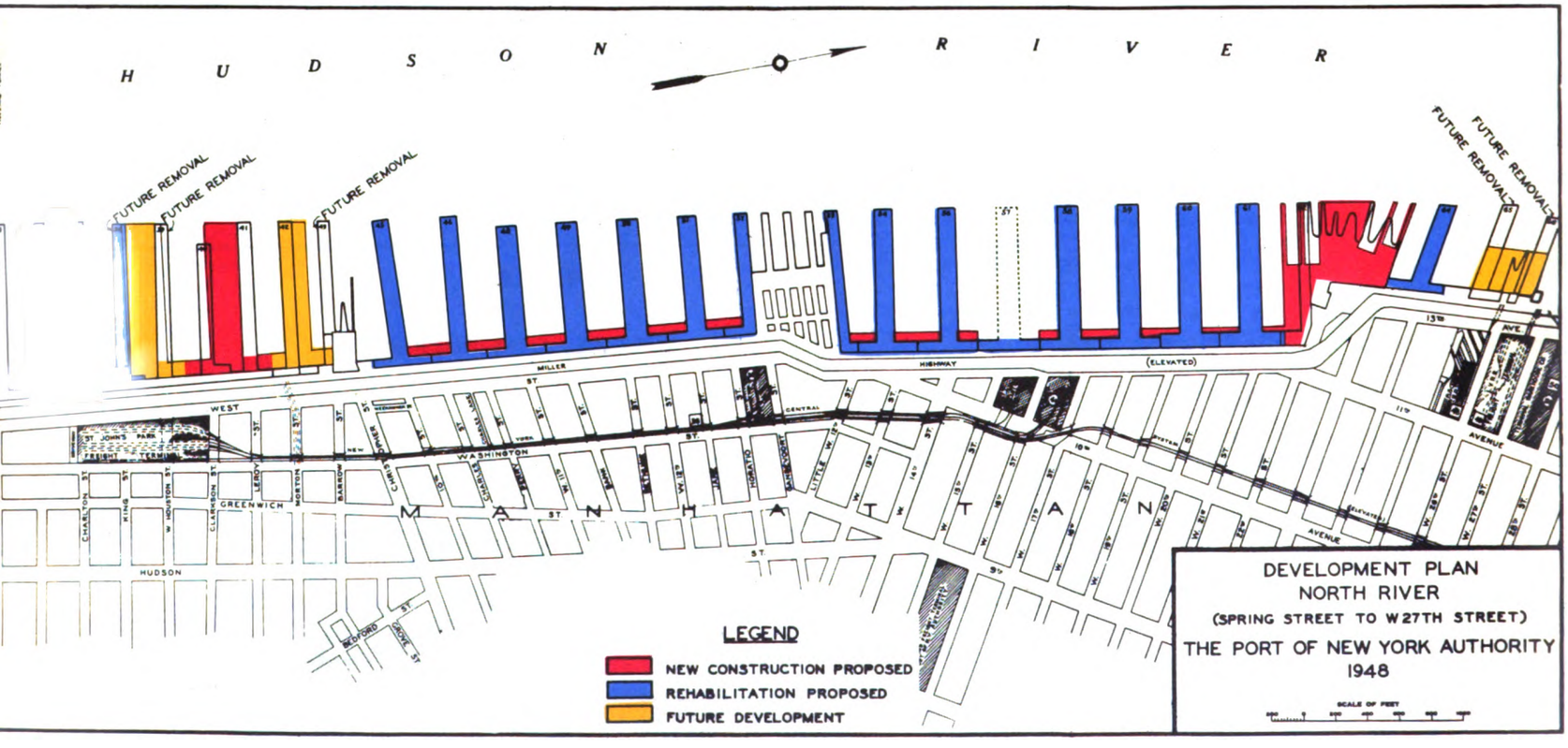
MAP 1



DEVELOPMENT PLAN
NORTH RIVER
(BATTERY TO SPRING STREET)
THE PORT OF NEW YORK AUTHORITY
1948

SCALE OF FEET

MAP 2



DEVELOPMENT PLAN
NORTH RIVER
(SPRING STREET TO W 27TH STREET)
THE PORT OF NEW YORK AUTHORITY
1948

SCALE OF FEET

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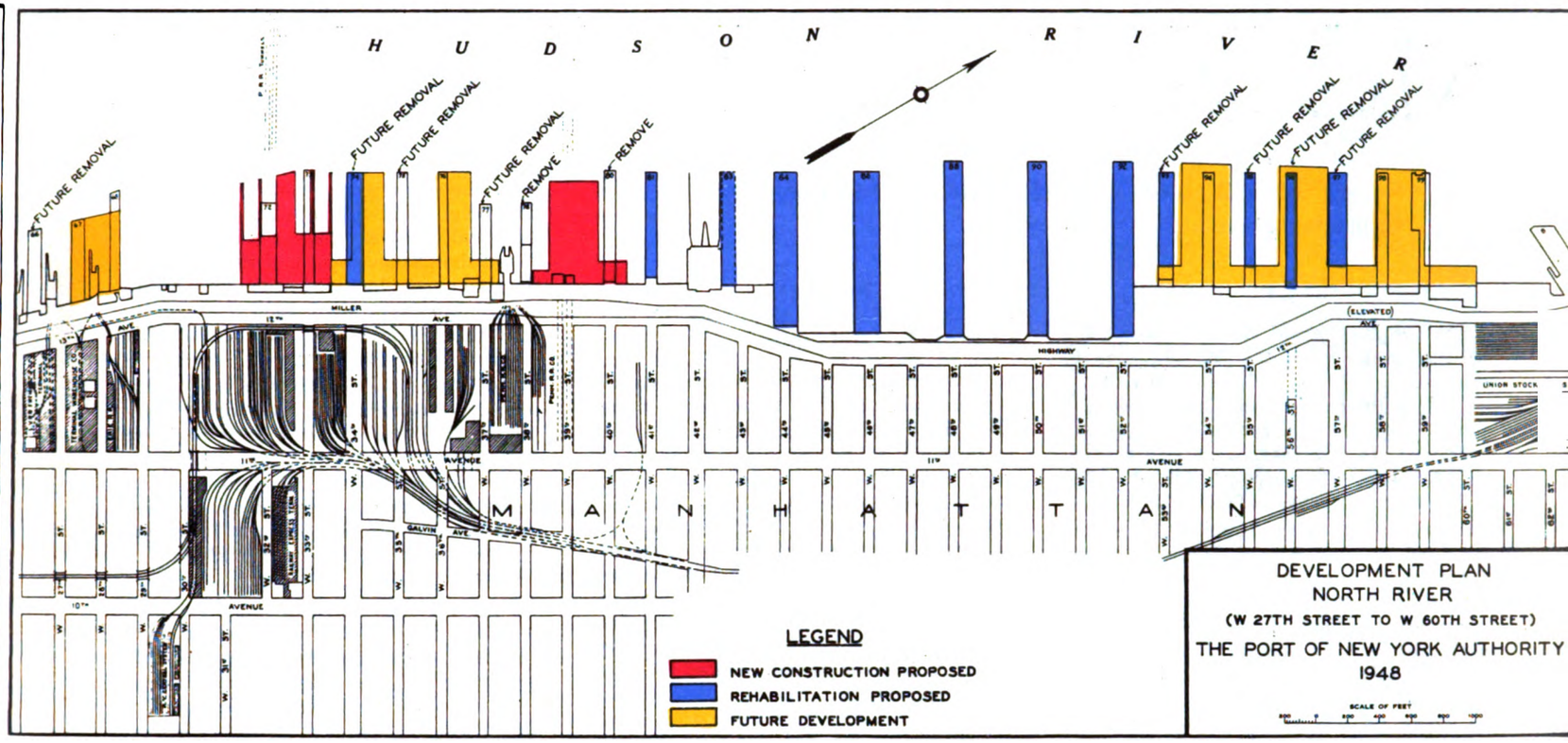
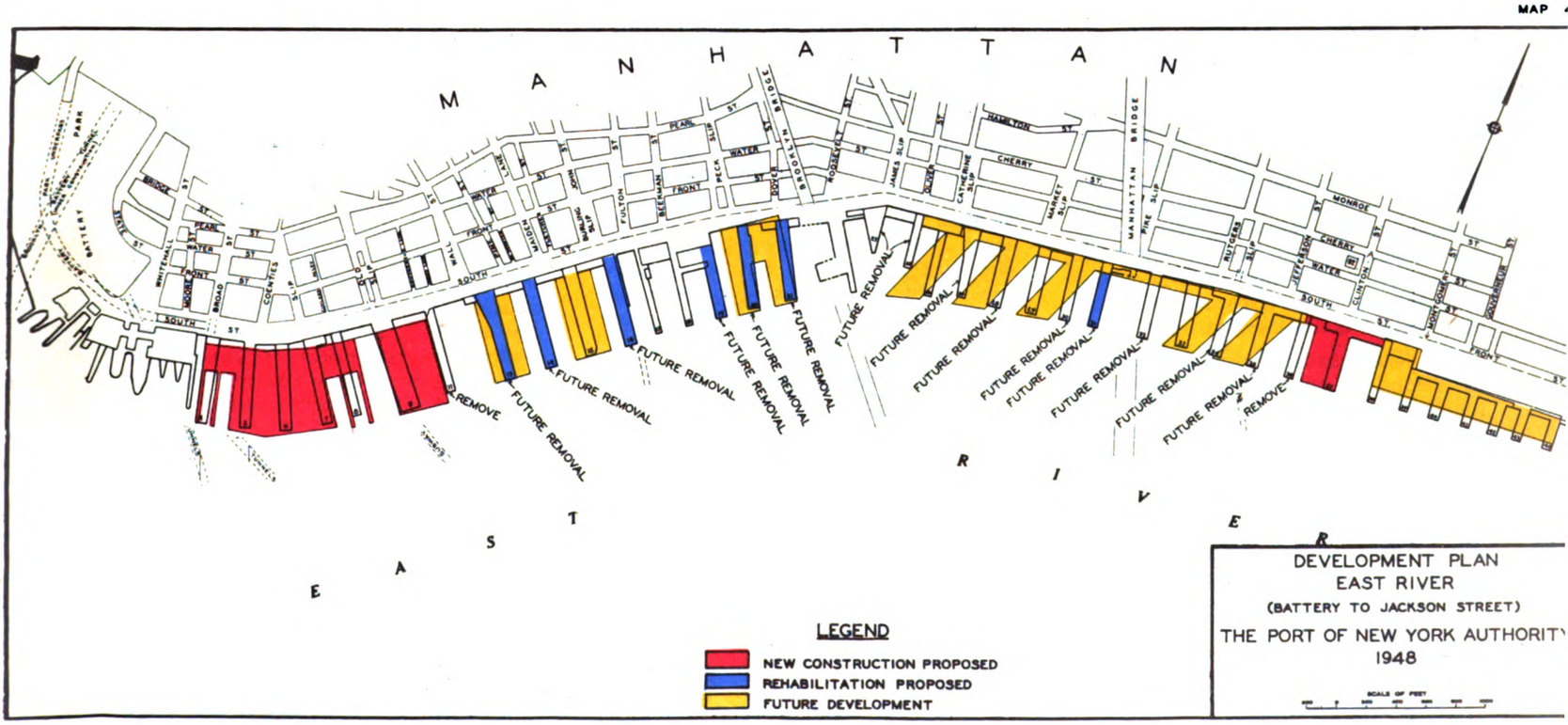
MAP 3



DEVELOPMENT PLAN
NORTH RIVER
(W 27TH STREET TO W 60TH STREET)
THE PORT OF NEW YORK AUTHORITY
1948

SCALE OF FEET

MAP 4



DEVELOPMENT PLAN
EAST RIVER
(BATTERY TO JACKSON STREET)
THE PORT OF NEW YORK AUTHORITY
1948

SCALE OF FEET

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DESIGN PROBLEMS OF A

MODERN OIL TANKER

Here's what it takes to design the most important transportation unit in the world.

Part I

*By FRANK L. PAVLIK**
Sun Shipbuilding & Dry Dock Co.
Chester, Pennsylvania

The unprecedented demand for petroleum products during World War II created a problem in logistics that was solved by the mass production of modern tankers for the transportation of these products. In the last days of the war the American oil industry was producing at an average rate of 4,600,000 barrels per day, and of all the supplies that were required by our Armed Forces including food, clothing, arms, armament, ammunition, shelter, medical supplies, etc., petroleum products represented more than sixty per cent by weight. Practically all of these oils were transported by tankers which constituted floating pipe lines to every fighting front. In wars of the past, one of the big problems was to supply food to the armed forces. During this war, the volume of petroleum products moved to the front was almost sixteen times that of the food.

In 1945, the American oil industry produced at the rate of 1,828,500,000 barrels annually; the world production for the same period was 2,737,000,000 barrels. The post war era has produced an even greater demand for petroleum, and it is estimated that by 1951 the annual production of the American oil industry will have been increased to 2,026,000,000 barrels; and the world production will be about 3,583,000,000 barrels. On the national basis this represents an eleven per cent increase over the production of 1945. The bulk of this oil will have to be moved by tanker, so that the need is apparent for the maintenance and building of a large and modern tanker fleet as a peacetime necessity, and as an important branch of our national defense set-up.

The recent national emergency found us lacking in many of the components required in tanker construction and substitutes had to be found, more often than not at greatly increased cost. By instituting a planned replacement program for our present fleet, enlarging it as we go, the costly lessons of the past will not have to be repeated. In 1939 the deadweight tonnage of the U. S. tanker fleet was 4,559,000 tons representing 23.9 per cent of the world fleet. By 1945, and principally as a result of the U. S. Maritime Commission program, this had increased to 59.8 per cent. From 1945 to 1947, U. S. deadweight tonnage has decreased to 59.2 per cent. The necessary construction in bulk quantity, as it were, of the T-2 class tanker has given the U. S. tanker fleet a preponderance of one class of vessel resulting in an unbalanced distribution as regards size, type and speed. Only 22% of the U. S. tanker fleet is under 16,000 tons deadweight, whereas 88.3% of the world tanker fleet is below that figure. More modern tankers in other categories are required, particularly those for shallower drafts. At present the U. S. A. has the largest tanker tonnage in the world, but this will be shortly challenged by the construction proceeding abroad where shipyards are contracted to capacity through 1950 for the construction of all types of merchant vessels. The following figures may be of interest to illustrate this: 69 vessels totaling 950,215 deadweight tons are building in the United Kingdom while Sweden has 29 ships on order totaling 409,995 deadweight tons.

The trade requirements of a tanker must be carefully analyzed before proceeding with a design; a stereotyped arrangement will not meet specific conditions in the highly competitive field of tanker operations. Often the principal dimensions themselves are limited by terminal facilities, etc. A vessel that is to transport cargoes of a single grade requires a simpler tank and piping arrangement than a vessel carrying mixed cargoes. The cubic of vessels built to carry gasoline and other light gravity oils must be adequate for the available deadweight. The following material will be limited to the ocean tanker in merchant service.

Deadweight and Speed

Prime factors in the design of a tanker from the owners' point of view are the deadweight and the speed of the vessel. The total deadweight is the difference between the displacement and the weight of the ship alone. Included in the total deadweight are cargo, fuel, feed water, potable water, stores, crew and effects. The cargo deadweight is the revenue producing factor which carries the whole business enterprise, so that weight saving in all other elements is a requisite from the standpoint of financial success. Cargo deadweight should be used as the basis for making comparisons between tankers with different types of hull construction and/or propulsion machinery.

Within this decade, technological developments coupled with improved materials and methods of construction have resulted in substantial reductions in ship weights which, for a given displacement, have resulted in increased deadweight. Examples of this are the employment of welded construction in hull and machinery, and the trend to high pressures and temperatures in steam propulsion machinery installations.

In the United States emphasis appears to have been placed on deadweight; for a given speed the models are relatively fuller, and the average deadweight of American tankers is higher than that of tankers built elsewhere. The ratio of deadweight to displacement for present tanker practice is listed in Table I.

Table I

Deadweight	Deadweight/Displ. Ratio
5,000	0.690
10,000	0.725
15,000	0.755
20,000	0.785
25,000	0.805

The above is predicated upon the use of welded construction for the hull. Where owners require a greater elaboration in any or all of the ship weight elements, a corresponding reduction in deadweight will result. Some owners have discovered that the addition of extra material in cer-

TABLE III

	(1)	(2)	(3)	(4)	(5) British Type
Length BP	521	503	450	309	460
Breadth	70	68'-3"	65	48'2"	59
Depth	40	39'-3"	37	21'9"	34
Draft	30'4-½"	30'-2"	29'	19'-4"	27'4-¾"
Block Coef.	0.777	0.740	0.732	0.735	0.757
Displacement	24670	21880	17790	6200	16793
Deadweight	19200	16600	13110	4240	12355
Dwt/Displ.	0.78	0.76	0.74	0.685	0.736
Capacity, Bbls.	154760	141160	111160	31300	.....
Service Speed	13	15-½	14-½	11-½	12
S.H.P.	5000	7500	5000	1400	3600
Machinery	Turbo-Elect.	Turbo-Elect.	Turbo-Elect.	Geared Diesel	Direct Diesel

In vessels (1) thru (4) welded construction was employed.

**Paper presented before the Philadelphia Section of the Society of Naval Architects & Marine Engineers.*

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tain spots reduces maintenance bills, and are willing to sacrifice some deadweight to effect this end.

The trend of tanker speeds has been upward and is evidenced by the figures for the world tank ship fleet presented in Table II.

Table II

Year	Speed
1900	9.03 Knots
1910	9.38 "
1920	10.01 "
1930	10.29 "
1940	11.18 "
1945	12.85 "
1947 (October 1st)	13.10 "

An analysis of speeds shows that in the U. S. tanker fleet only 22% of the vessels are slower than 14 knots while for the balance of the world fleet 84% are slower than 14 knots. Again the large number of T-2 tankers disproportionately affects the average in this respect. Generally speaking, the trend in Great Britain has been to build three classes of tankers, viz: those of 8,000 tons deadweight and 11 knots speed, 9,000 tons deadweight and 12 knots speed, and 12,000 tons deadweight and 12½ knots speed.

Principal Characteristics

For economical propulsion there is a close relationship between the length of a vessel and the fullness of form. For the vessels under discussion, at a speed-length ratio of 0.65, this relationship may be expressed by a variation of the Alexander formula where Block Coef.$=1.075-V/2\sqrt{L}$, V being the service speed. The amidship section is generally quite full, with coefficients varying from 0.980 to 0.995, and the percentage of parallel middle body ranging from 24 to 28 per cent. Some owners prefer to have their vessels designed with the bottom having a small rise of floor, claiming that it assists drainage. On the other hand, the lines of the vessel with the flat bottom can be made finer at the ends, thereby tending to decrease resistance to propulsion.

The location of the center of buoyancy is the result of a compromise between the requirements for minimum resistance and suitable trim, and the latter factor most seriously influences the final decision. At speeds corresponding to $V\sqrt{L}=0.65$, the center is usually located from one to two per cent forward of the amidship half length of the vessel, and small variations either way have little effect upon resistance.

The ratio of the length of entrance to run varies between limits of 0.75 to 0.90 with the latter value in more common use.

In general, tankers built in the U. S. A. have proportionately a greater beam and depth than those built elsewhere. The beam may be expressed as a function of the length, varying approximately between limits of $(.1L+18)$ and $(.1L+20)$. The depth may be expressed in a similar manner, varying between $(.07L+3)$ for vessels with normal sheer and $(.07L+4)$ for vessels with no sheer.

Table III gives the principal characteristics of some recent tankers on a peacetime basis.

In the design of any vessel it is essential to prepare a reasonably correct estimate of weights and centers of gravity for the determination of deadweight and trim. This is particularly true for the tanker where the weights of propelling machinery and expendable items such as fuel, water, etc. are quite removed from the general center of gravity of the vessel and the long levers produce considerable trimming effects.

Tankers transiting the Panama Canal should have their loaded trim conditions for arrival at the Canal investigated, so that without undue ballasting or shifting of fuel the vessel may comply with regulations. For this condition the vessel will be required to have a trim of not less than 6 inches nor more than 36 inches by the stern, and be on an even keel as regards list.

Design Procedures

Design procedures in different shipyards vary somewhat so that the following is suggested as one of many ways of arriving at the required answer.

1. An estimate should be made of weights and centers from accumulated data for similar vessels.
2. Revise the above estimate when basic design plans are completed and the various weight groups such as hull steel, propelling machinery, outfit, etc. can be analysed on the basis of accumulated data and approximate calculations.
3. Make detailed calculations from working plans as the work proceeds in the drawing room.

It can be accepted as almost axiomatic, that as construction proceeds, the weights have a tendency to increase.

Apart from the design stage, is the final determination of the light weight and longitudinal center of gravity, etc. as the

FRANK L. PAVLIK

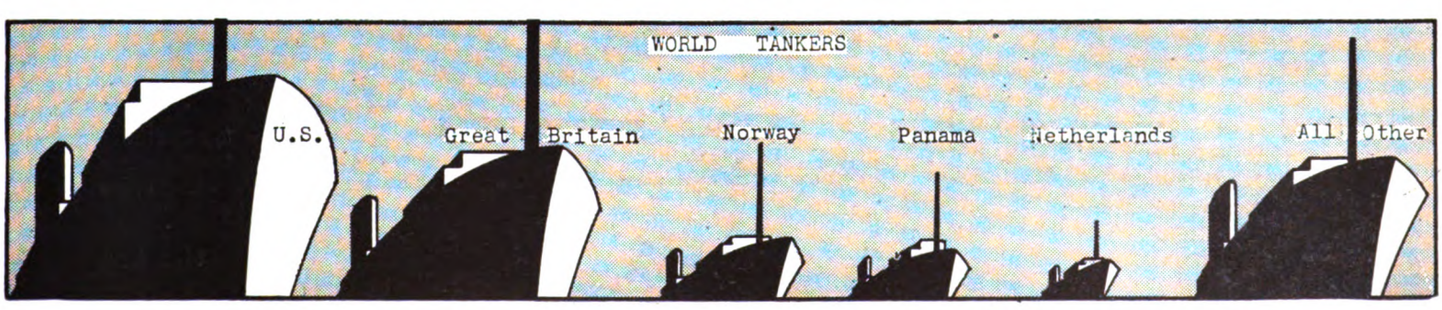
vessel is being completed in the wet basin. Conditions are seldom ideal for reading drafts and taking all other data necessary to arrive at accurate results. May we strongly urge that enough time be taken to obtain reliable data, that the vessel be as nearly complete as possible and that a minimum of fuel, water, etc. be placed aboard. An inclining experiment should be performed on at least one vessel of each class in order to determine the vertical center of gravity for purpose of stability. The data thus obtained is invaluable to the owner for determining operating conditions, and as a basis for computations if any alterations are made, and to the builder for reference data.

The metacentric height for tankers of normal proportions is more than adequate under all normal conditions of operation and the following values are given to indicate their possible range:

Light Ship	12′ to 20′
Loaded Ship	5′ to 8′

Although most tankers have excellent subdivision and can generally comply with the requirements of the two compartment standard, a routine flooding calculation should be made, particularly in the way of the ends of the vessel. This will show whether the vessel can survive a collision damage, for example, in way of machinery spaces.

(Continued on Page 59)



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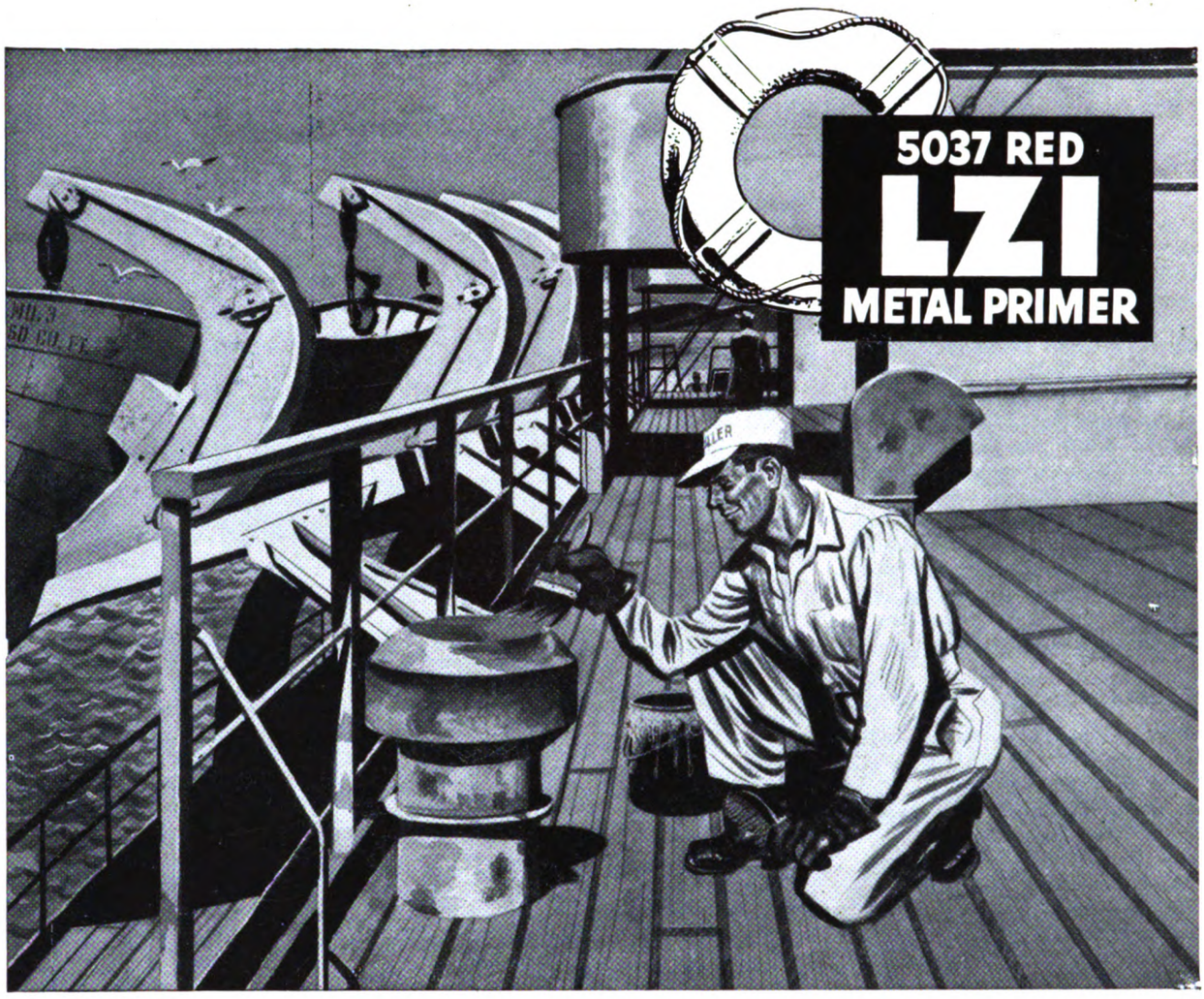

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HOW HIGH ARE SHIPPING PROFITS?

Here are facts which show that steamship companies are not "reaping vast profits" from the postwar boom, but merely establishing a sound financial stability.

By JAMES A. McCULLOUGH
McCullough Associates
Washington, D. C.

The income accounts of some of our large shipping companies are a matter of public record. Many people have openly criticized the *high* earnings as reported. Others, particularly the potential investors in shipping securities, are more than dubious about these *high* earnings. Just how *high* are shipping earnings anyway?

If the standard for judging shipping earnings is the pre-war level, then there has been a tremendous increase. More often than not the industry lost money before the war. The rate of increase from these negative deficits to the positive profits of today would have meaning only to a mathematical scientist. Such an increase is of no practical value in answering the question raised in the first paragraph.

The point can perhaps be made more clear in illustration than in theory. A short time ago one of the outstanding American shipping companies reported 1947 net earnings of $10,000,000. This report attracted widespread attention primarily because the company lost money consistently in the decade before the war. A $10,000,000 report from an outstanding company in any other industry of shipping's importance would have passed unnoticed.

The real standard for judging current earnings is whether they are adequate to maintain the industry in sound health during the good and bad years which lie ahead. Here no one now knows the answer but, as prudent people, we can draw upon past experience. The composite income accounts of the three major shipping companies which happened to make public their audited accounts throughout the twenty year period 1920-1940 showed earnings in only six years.

In retrospect we all know that the *high* earnings immediately after World War I were a myth. The shipping industry published these earnings, they paid taxes on them and they reinvested them in fixed assets (mostly ships) at inflated costs. Then when the crash came, the real measure of the *high* earnings was the deflated value of the fixed assets which the industry had acquired. Some ships which cost up to $3,000,000 apiece to build had a market value of about $600,000 even before they had left the shipyards in 1921.

Truly shipping has been the prince-and-pauper industry. If only for our national defense interest, we all hope that it may not be so in the future. But a close scrutiny of the facts is hardly reassuring.

Shipping Rates

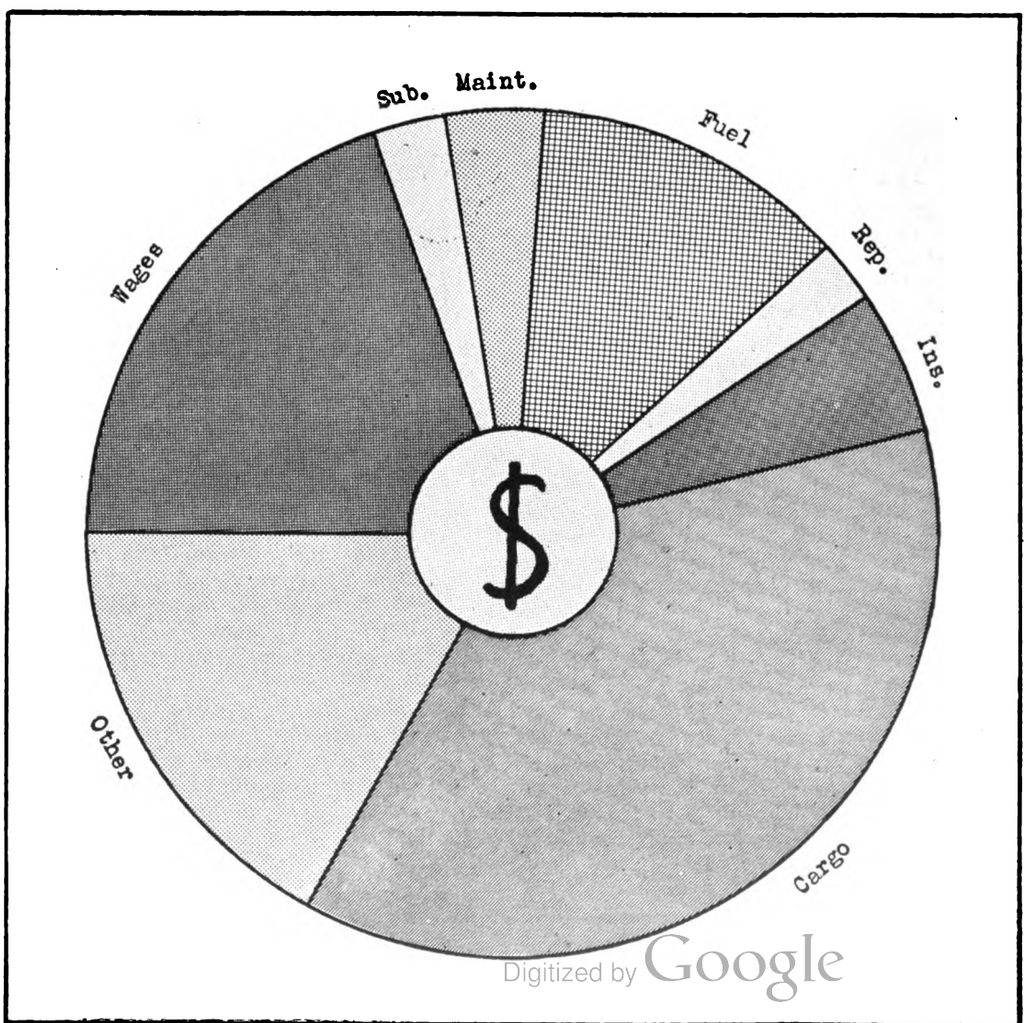
The adjacent chart shows the trend of the three main dry cargo rate categories from the December 31, 1938 base. Worthy of note is the fact that the liner and tramp trend patterns are similar to certain commodity price patterns.

Judged by any standard the increase in domestic shipping rates (coastwise and intercoastal) has been modest. The 57.5% increase in intercoastal rates from the end of 1938 to the end of 1947, combined with the doubling of operating costs, explains the plight of the domestic shipping industry today. Those inclined to brush off the low level of domestic rates as unimportant should remember that before the war this branch of the industry represented two-thirds of total dry cargo employment under American flag.

At the other extreme the trend in world tramp rates is more in line with the trend shown by the fast moving commodity indexes. Even so, the trend of tramp rates has fallen far behind the trend of cotton prices and the other fast movers since the mid-1947 break in the voyage charter market. Another point to remember is that there were virtually no American tramps in service before the war. Current tramp rates, although far above the 1938 level, are barely sufficient to attract the high cost American tonnage to the service.

Probably the best single measure of the shipping industry's rate position is the trend of liner rates as controlled by the international liner conferences. Generally these rates are somewhat more than double the pre-war level. Our chart shows that such a rate of increase is less than the average commodity price ad-

WHERE DO COST DOLLARS GO?



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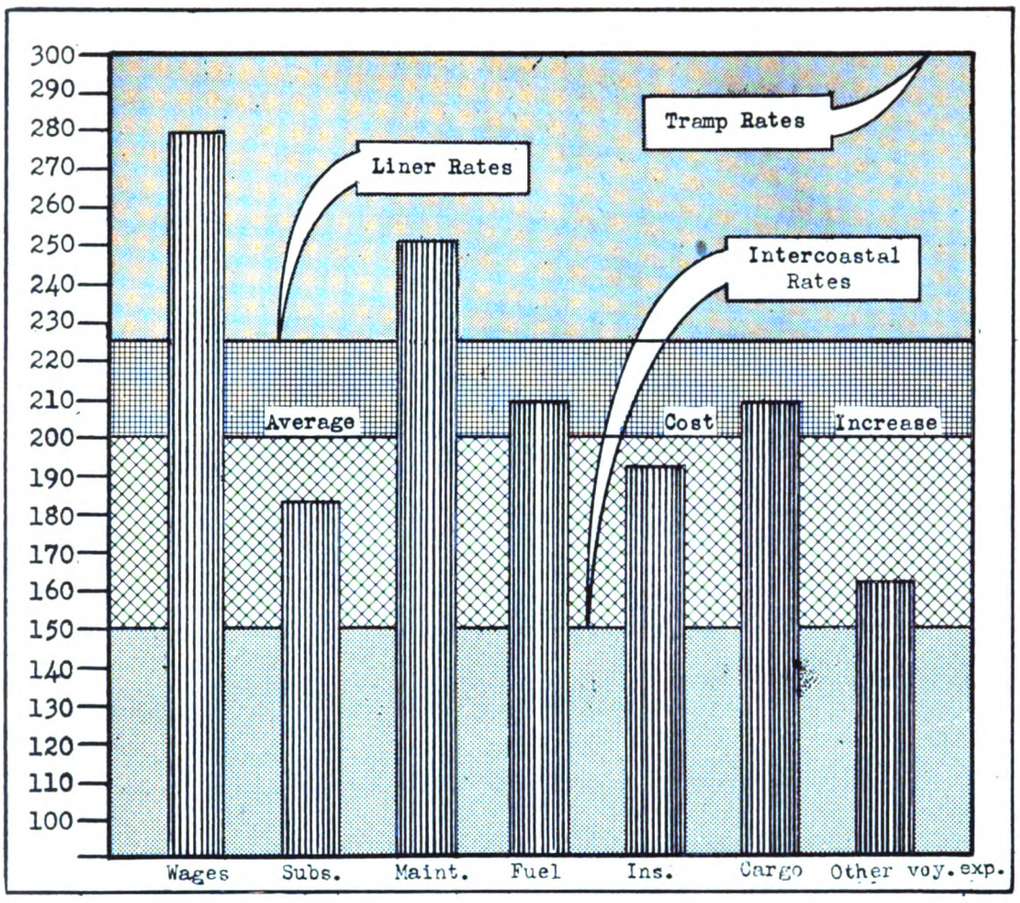

Base year 1940

WHAT'S HAPPENED TO SHIPPING COSTS?

vance. It is roughly the same as the rate of increase of vessel operating costs.

If the liner rates have increased so modestly why, then, has the industry been able to produce earnings where deficits were common before the war? The answer is the vessel load factor. The difference in voyage costs of an empty ship and a full ship, aside from the stevedoring item, is small. The present rate structure which produces good earnings with a ninety percent load factor would have yielded losses with some of the pre-war load factors of seventy percent or less. No shipping man should lose sight of this fact, for it may take on new meaning in the not-too-distant future.

Vessel Operating Costs

The operating cost trend has been more difficult for shipping than for most shoreside industries. For one thing shipping wages have moved from a relatively low position to a relatively high position in the nation's general scale of gross wage payments. For another, the shipping industry must pay many special penalties for operating in the unstable world environment of today. An area risk payment of a flat $2.50 per day, for example, is paid every American seaman while in Europe and the Orient. If a vessel should be detained thirty days in the security of the port of London, every member of the crew would be paid a "risk" bonus of $75.

The increase in operating costs in the intercoastal trade from 1940 to July 1946, on the basis of Maritime Commission and WSA records was inserted in the record in Ex Parte 165 by C. S. Morgan of the Interstate Commerce Commission. Since the 1946 data were on government owned vessels, Dr. Morgan attempted to convert to the basis of private ownership but, judging from his small repair item, he was not wholly successful. Nevertheless this material, although understating the trend, has the definite merit of preparation and auditing by a neutral source. It is shown below exclusive of charter hire cost:

Intercoastal Operating Expenses

(Costs in thousands of dollars)

	1940 Old Vessel	*1946 Victory Type*	*1948 Est. Victory Type*
Turnaround Days	90	82	82
Cargo Tons	13,780	12,827	12,827
Vessel Expenses:			
Wages	$ 15.4	$ 35.6	$ 43.1
Subsistence	3.0	5.5	5.5
Maintenance	3.3	8.3	8.3
Fuel	12.4	17.5	26.0
Repairs	6.7	5.3	5.3
Insurance	6.3	12.2	12.2
Other	1.2	1.2	1.2
Total Vessel Expense	48.3	85.6	101.6
Cargo Handling	38.4	69.6	81.2
Other Voyage Expense	22.2	35.9	35.9
Total Voyage Expense	60.6	105.5	117.1
All Operating Expenses	$108.9	$191.1	$218.7

The current estimate is a 1946 to 1948 projection made by this writer on three items only. Both wages and cargo handling expenses are assumed to have increased in line with contractual wage changes on the East Coast. Fuel expense is adjusted to the current spot price of $3.05 per barrel. Other expense items have obviously moved up but, in the interest of presenting a conservative picture, such increases have been ignored. It is equally obvious that voyages to foreign waters would show an even greater long-term cost inflation.

No single expense item even approaches cargo handling in its over-all importance. In 1940 the basic straight-time wage rate in New York was $1.05 per hour. Today it is $1.75 per hour. But even this basic increase does not tell the whole story. Owing to the decline in output per man-hour the handling cost on general cargo items has increased 150 percent and sometimes more.

Our cost trend brings into bold relief the threat of declining load factors to the industry. Let us assume that a vessel carries outbound 7,000 tons of general cargo at $35 per ton and that its inbound gross revenues aggregate $20,000 on whatever cargo can be found. Total gross freight revenues of $265,000 would then be $46,300 in excess of our operating costs for a vessel turnaround of eighty-two days. This net revenue of $46,300 could then be used to meet overhead expense, the capital cost of the ship and the divi-

Mr. McCullough, who has been associated with the shipping industry since 1942, has become a noted analyst of shipping's economic problems. Prior to 1942 he was a research analyst in the investment industry. This combination of experience is evident in this article on shipping economics written for The LOG.

During the war period 1942-1946 Mr. McCullough was stationed in London as the Director of WSA Programming and after the war managed the relief shipping program for WSA. He also served as U. S. representative on the United Maritime Executive Board in London, which in cooperation with the UMEB in Washington, controlled the allied shipping during the post-war emergency.

In 1946 Mr. McCullough established the Research Division for the National Federation of American Shipping and acted as Director of Research for one year, at which time he established his own firm of economic consultants.

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dend requirements of the stockholders.

Now let us assume that the outbound load factor should decline thirty percent, a not particularly drastic assumption in view of our longer-term world trade outlook. Then the aggregate gross freight revenues would fall to $191,500, a sum insufficient to meet operating costs to say nothing of overhead and capital requirements.

Every day someone outside the shipping industry proposes a painless way of cutting the cost structure. A few of these proposals are not without merit. Some are of the crackpot variety. Most have already been tried by the industry and have been found wanting. The tanker industry may have found part of the answer for a few restricted foreign trades. The 26,000 ton behemoths, with operating costs very little above the 16,000 ton T-2's, will mean a substantial cut in per barrel carrying costs. But there is no similar possibility in the dry cargo field.

In any case, to be of practical value, any proposal must take into account the limitations inherent in our existing dry cargo fleet. This fleet is almost exclusively war-built and even to remodel any appreciable part of it would take time. No one knows whether we will have that time.

Looking at the problem realistically, any big drop in the load factors must be met by direct cuts in the two big operating items, namely, cargo handling wages and ship wages. Much could be accomplished through a greater man-hour output, particularly in the stevedoring field. But the basic wage itself can be supported only by inflated load factors.

Investment Appraisal of Shipping Earnings

Whether he be a shipping executive or a gratuitous critic, anyone considering the future of the shipping industry must weigh carefully the foregoing facts. That the shipping executives are weighing carefully the forward problems is borne out by current dividend policy. A simple average of the 1947 per common share earnings* of four major companies who issue regular reports is $5.54. In the same year these companies—all having extensive foreign trade commitments—paid out to their stockholders a simple per share average of $2.06 in dividends. It is no answer to point to subsidy restrictions as a partially limiting factor on dividend payments, for the restrictions in subsidy contracts under the 1936 Act were themselves motivated by the hope of neutralizing the severe fluctuations in the fortunes of the shipping industry.

The appraisal of shipping earnings by the investing market is an additional reflection of the true nature of current earnings. The average per common share market value of our four companies on January 31, 1948 was $22. This average was only four times 1947 per share earnings and ten times annual dividends on the basis of 1947 payments. In contrast ten leading industrials were selling at a price ten times per share earnings and twenty times per share dividends. This is another way of saying that the investing public will buy the earnings and dividends of the shipping industry only at a substantial discount.

Foremost in the minds of any investor must be the conviction that the earnings of today are not a good measure of the future earnings prospects of the industry. Whether these earnings will carry the industry through the coming lean years and provide for an orderly replacement of capital assets is not entirely clear. Of particular importance it is not clear to the investor that the current earnings combined with the prospects for the next several years will be sufficient to permit capital replacement at the inflated vessel costs of the post-war period.

The shipping industry, our government and the American public have had much hard experience with our merchant marine. While many of the mistakes of the past may be recommitted, it is not too much to expect that the mistakes should be less sweeping. One of the old mistakes would be a failure to consider current earnings in the ten or even twenty year perspective. If we all accept the fact that the shipping industry today is drawing upon the future to finance a strong privately owned merchant marine, then we will be in a better position to judge what is good for the industry.

**Partially estimated from interim reports.*

⚓ ⚓ ⚓

SS GEORGE WASHINGTON Will Enter Alaska Trade

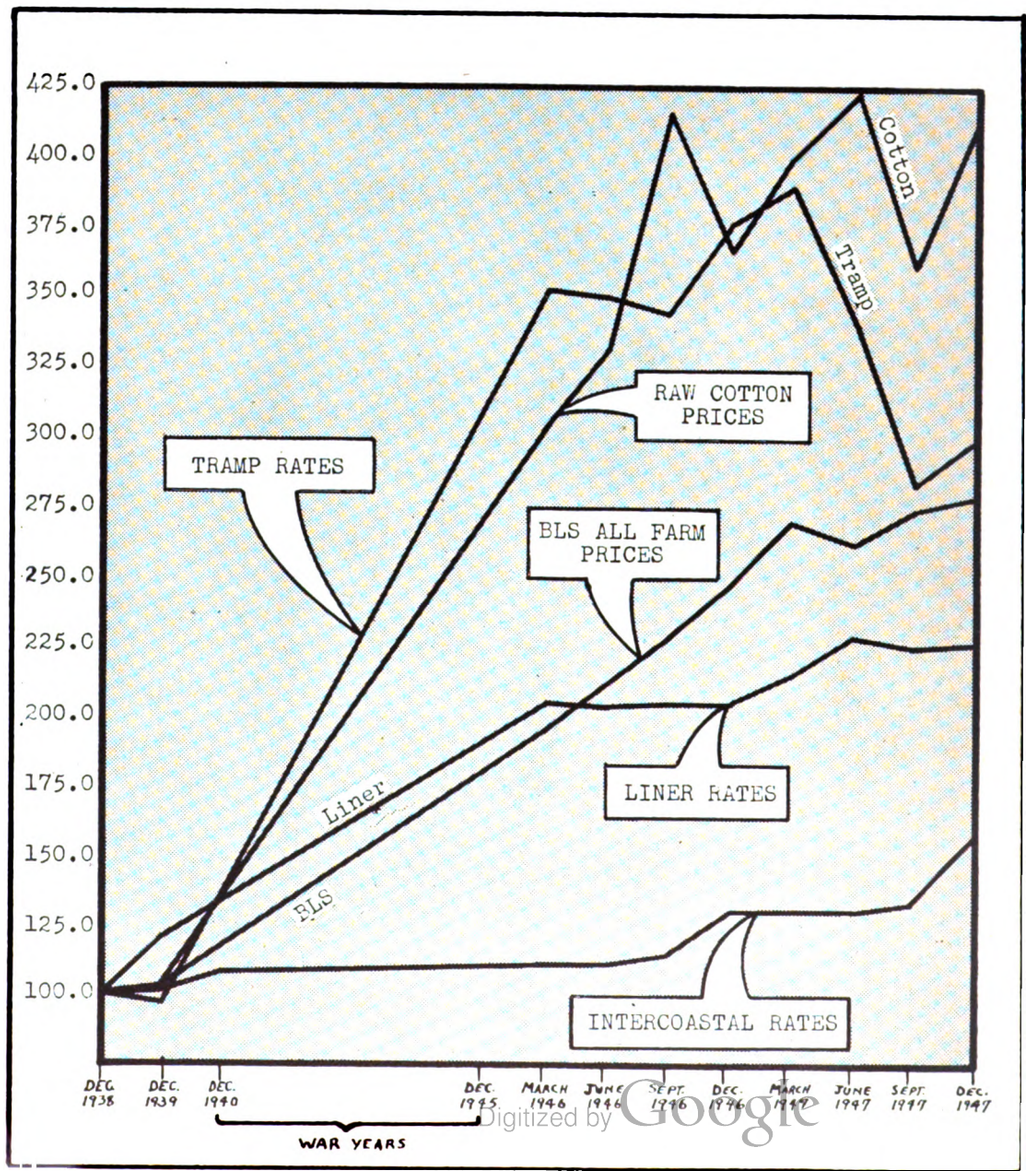
Puget Sound Bridge and Dredging Company has been awarded the contract for converting the ss GEORGE WASHINGTON for use in the Alaska route for the Alaska Transportation Company.

The GEORGE WASHINGTON, veteran of 20 years' service in the Atlantic coastwise trades, is a purchase of the Alaska Transportation Company from the Maritime Commission.

Built at Newport News Shipbuilding and Dry Dock Company in 1924 the vessel operated in the service of Eastern Steamship's Old Dominion Line prior to the war. Since the war she has been operated on regular runs to Bermuda by Alcoa Steamship Company under charter from the Maritime Commission.

Of 5,184 gross tons and 390 feet in length, the GEORGE WASHINGTON will accommodate 250 passengers. She will be used by the Alaska Transportation Company primarily as a passenger carrier in the Alaska trade, accepting only perishables and high class freight for the cargo holds.

WHAT'S HAPPENED TO SHIPPING RATES?



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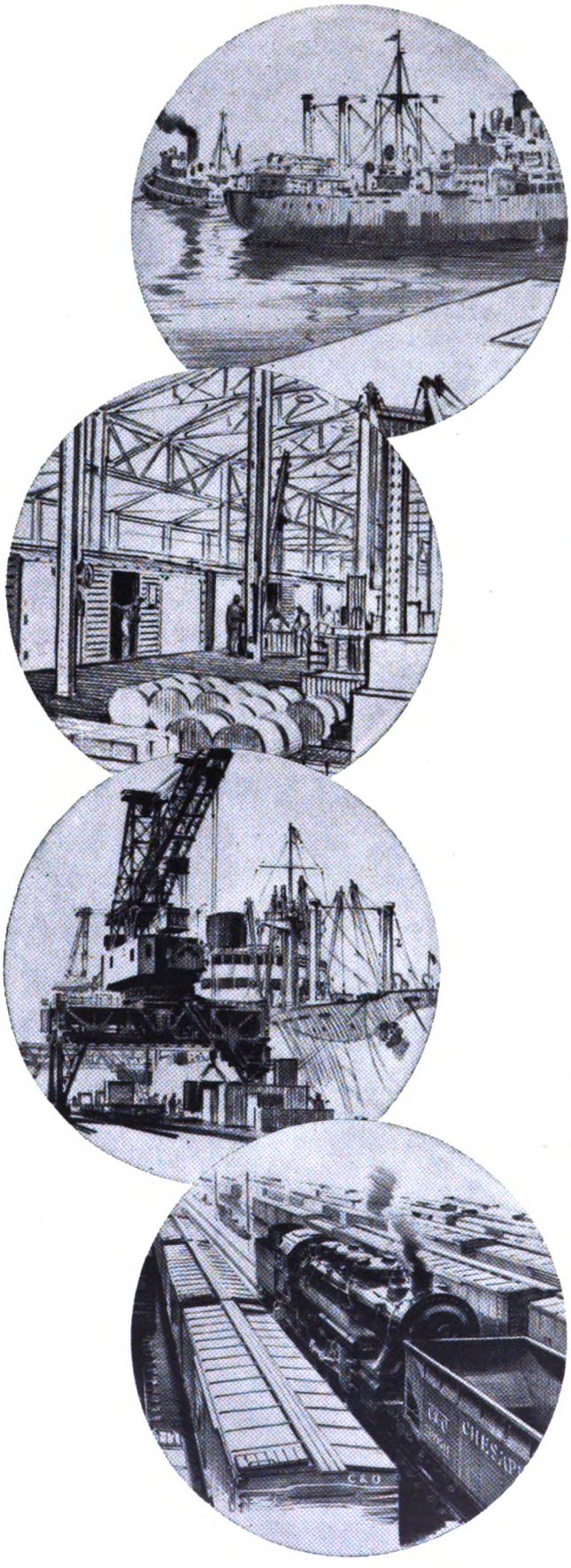

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Nine big piers: four are covered, sprinkler-protected merchandise piers with 500,000 sq. ft. of floor space; two are steel and concrete coal piers, electrically-operated—another under construction. Two are open piers. Railroad tracks on every pier facilitate rapid, easy freight transfer.

3. *Handling Equipment!*
Includes giant gantry cranes, hoists, elevators, conveyors, pipe lines, airveyors, car dumpers, tractors, trailers, and a large fleet of trucks fitted with power lifts. Everything is provided for handling cargo of any kind swiftly and safely . . . equipment vastly important for fast turn-around.

4. *Railroad Yards!* Numerous large railroad yards for receiving, classifying, forwarding, storage and service feed and receive freight to and from ships, warehouses and Chesapeake & Ohio lines. Total combined capacity is 10,300 cars.

The World Commerce Department of the Chesapeake & Ohio is a service organization fully equipped to help exporters, importers, forwarders and ship operators on all problems related to rail and ocean shipping of foreign and intercoastal freight.

Newport News is famous for quick ship turn-arounds.

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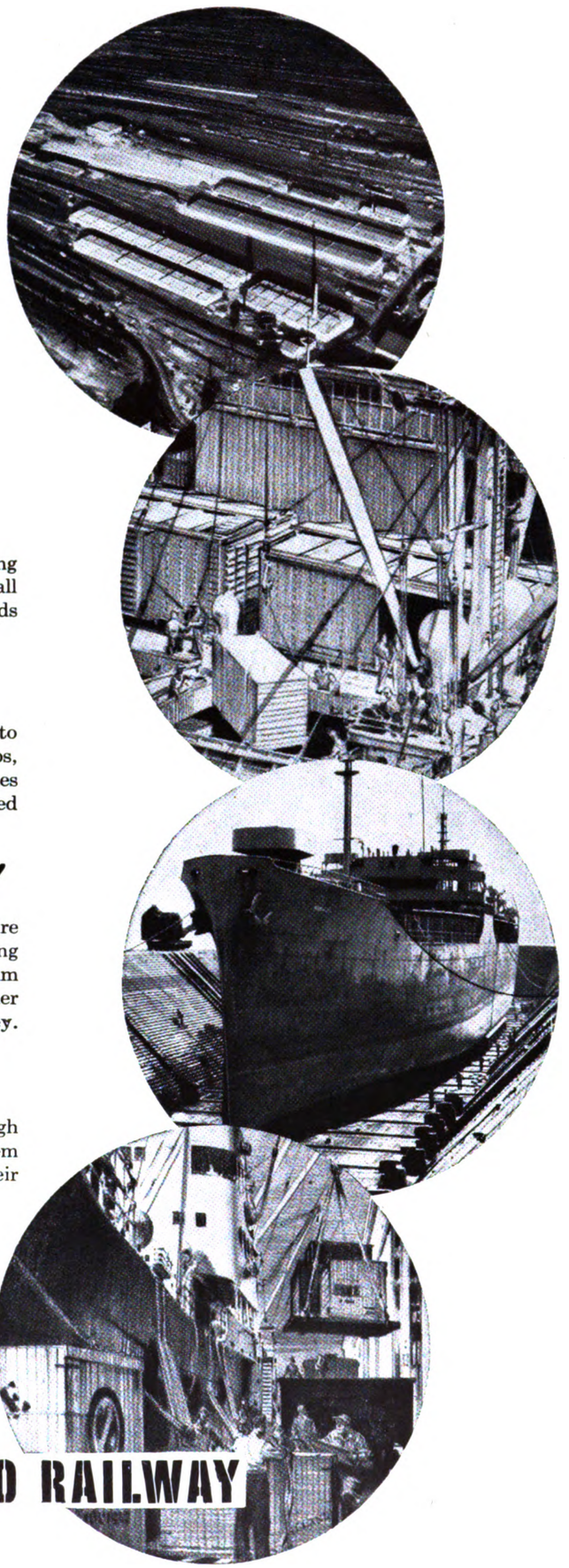
CAN HELP YOUR

...8 reasons why!



5. Warehouses

The port area has 113 warehouse units containing 34,000,000 cu. ft. of storage space all sprinkler-protected, all rail-connected to shipside. In these buildings 10,000 carloads of freight can be stored awaiting cars or ship space.

6. Machine and Manpower!

At Newport News mechanical resource is employed to the limit in the movement of freight in and out of ships, cars and warehouses. But more important than machines are men. Hundreds of stevedores are regularly employed at this port, and they are skilled and willing.

7. Ample drydocking facilities!

The drydocking facilities of the Newport News area are more than ample to meet any repair or reconditioning requirement with maximum efficiency. In a minimum of time your ship is back in service. That is another example of how Newport News helps ships make money.

8. You sail full and down!

Ship owners say the wide variety of freight routed through Newport News helps them make more profit—helps them get cargo for weight and cargo for measurement, so their ships can sail full and down.

If you have a problem, contact G. C. Marquardt, General Manager, World Commerce Department, Chesapeake & Ohio Railway, 233 Broadway, New York 7, N. Y., or any C&O representative.

THE CHESAPEAKE & OHIO RAILWAY

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WASHINGTON Roundup

By The LOG's Own Correspondents

ERP Holds Top Spot In Washington Melee

Almost the sole subject of conversation and activity in Washington during the past month has centered around the European Rehabilitation Act. The shipping provisions, especially, have come in for much bitter debate, with the National Federation of American Shipping spearheading opposition to the transfer of 500 ships. The CIO, AFL, and their maritime unions have fought these provisions side by side with the Federation and the Maritime Commission. On the other side of the battle looms the omnipotent State Department (better known in Washington these days as "Western Europe's Washington Embassy"), backed up by Harry Truman, Senator Vandenberg, the Herter Committee, and various other groups following Secretary of State Marshall's "all or nothing" edict.

One major tactical development which gave the shipping industry what seemed for a while the upper hand was the passage into law of the Tobey Resolution extending the authority of the Maritime Commission to sell and charter ships but specifically prohibiting the sale or charter of U.S. vessels to non-citizens. (See The LOG for March, 1948). However, the ERP bill as reported to the floor of the Senate provided for the chartering (but not sale) of 300 warbuilt ships. Senator Brewster then introduced an amendment to prohibit this transfer, and Senator Knowland introduced an amendment which provides that approximately 50% of the ERP goods transported from U.S. to Europe be carried in American-flag bottoms. Both of these amendments were allowed to lie on the table. Senator Brewster, when introducing his amendment, encountered opposition from the floor of the Senate, but ably defended the position of the industry, labor and Maritime Commission in opposing the transfer of ships.

For the first few months after the Marshall Plan was thrown into the hopper, the Administration, and specifically the State Department, harped on "dollar costs" and the "dollar savings" to be effected by the transfer of these ships. However, after they saw they would get nowhere with this argument, since it had been largely exploded by the opposition, the State Department launched a new form of attack, equally as unrealistic. They are now claiming that the chartering of 300 ships will break the charter market and force rates down. They blithely overlook the fact that those 300 ships will be operated under foreign flag instead of the U.S. flag, and that the foreigners get more of the State Department's precious "dollars" if rates are kept high.

Right now there is a wide difference in cost of operation between U.S. and foreign ships. The ocean freight rates are the same for vessels of all flags. Therefore, no matter how many dollars U.S. ships earn, the foreigners earn more. However, as rates come down, even though they might go low enough to force U.S. ships out of the trade, they will approach their own operating costs and thus earn very few dollars. The fact remains, the foreigners do not want to overtonnage the world fleet any more than do U.S. operators.

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Shipping Division of State Dept. Doomed by House Group

The House Appropriations Committee lopped off the Shipping Division of the State Department by making a reduction of $4,350,000 in the appropriations for Departmental Services. The Committee made the following remarks:

"The committee wishes to reiterate its previous recommendations, namely, that the Department of State get out of the operating phases of activities for which other agencies of the Government are responsible and concentrate on over-all foreign policy. There is little or no justification, for example, for there being located in the Department an Aviation Division with 30 employees, or a Shipping Division with 21 employees, or a Telecommunications Division with 26 employees. The substantive work in connection with all of these functions is undoubtedly performed in the departments of the Government responsible for these types of activities. While it may be advisable for the department as to over-all policy in these activities, the committee can see no justification for this operating personnel."

If the recommendations of the House Appropriations Committee are accepted by the Congress, the Shipping, Aviation and Telecommunications Divisions will get the axe.

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House Committee Would Cut Canal Funds and Hike Tolls

The Panama Canal budget is slated to be cut by $3,959,987 and at the same time the House Appropriations Committee recommended that tolls be raised to the $1.00 per ton legal maximum, and in addition, that the proper Congressional committee consider lifting the legal limit. (See The LOG for July, 1947, p.p. 36-37, "Who Pays for the Panama Canal.")

The Committee, in its report, stated, ". . . operating costs have materially increased to a point where the Panama Canal finds itself with insufficient funds from tolls to meet all operating costs. In view of the facts, including the fact that commercial shipping interests have increased their charges to the public, it is the opinion of this committee that toll charges should be increased to the maximum amount permitted by law. . . ."

What the Appropriations Committee overlooked when making this recommendation is the fact that the ships most directly affected are in the intercoastal service, which have been unable to raise rates. In fact, the companies engaged in this service are pressing for *lower* rates as a means of enabling them to reestablish intercoastal operations. For the plight of intercoastal shipping see the article entitled "How High Are Shipping Profits" in this issue of The LOG.

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House Bill Requires Good "Character" for Seamen

A bill introduced into the House by Representative Buck of New York would require good character as a prerequisite to the issuance of seamen's papers.

The bill provides that none of the documents, books, or certificates authorized to be issued to merchant seamen as a condition to their employment on vessels of the United States should be issued until the authorized issuing officer is satisfied that the applicant is a person whose character and habits of life are such as to warrant the belief that the applicant is a safe and suitable person to serve aboard vessels of the United States.

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Hale Would Amend Act to Put Steamship Men on Commission

Representative Hale of Maine has introduced a bill into the House designed to amend the 1936 Merchant Marine Act to allow steamship men to serve as Commissioners on the Maritime Commission.

The Act now requires that: "No person shall hold office as a member of the Commission who, within 3 years prior to his appointment shall have been employed by, or have had any pecuniary interest in, any carrier by water or substantial pecuniary interest in any other person who derives a substantial portion of his revenues from any business associated with ships or shipping."

The need for this amendment has been apparent for some time, and the industry in general endorses it. Amendment of this section would permit men familiar with the current problems of shipping to give the industry as a whole the benefit of their experience.

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Legislation to Increase Benefits for Longshoremen

Companion bills introduced into Congress would amend the Longshoremen's and Harbor Workers' Act to provide greater benefits payable under its provi-

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A LETTER TO THE STATE DEPARTMENT

Congressman Karl Stefan (R) Nebraska, made an interesting experiment with the Department of State. He put an investigator to work tracing a routine letter. The letter was from a steamship company enclosing a money order for $100 to be forwarded to the American Mission in Europe for air passage from Bucharest to Prague for one person. Here's what happened to the letter as reported by Mr. Stefan in the Congressional Record for March 3, 1948.

Following is the result of the investigation:

The letter was received at State Department headquarters and delivered to its Twenty-second Street building.

Step 1: There it was received in the Protection Services Division.

Step 2: The letter was opened, and the date stamped and check stapled thereon.

Step 3: It was received in the card room for distribution.

Step 4: It went to the Public Service Branch for review and determination as to the acceptability of the check. It was also entered in the memorandum record to avoid responsibility if the letter were lost later on.

Step 5: A special messenger delivered it to the cashier's office, Division of Finance, in the State Department's Seventeenth Street building, with the memorandum record which the cashier receipted.

Step 6: The check was detached and a record of remittance—DS-408—was prepared in four copies, one copy being attached to the letter; the check was sent separately through channels to the Treasury for deposit.

Step 7: The letter was sent back again to the Twenty-second Street building, in the Public Service Section, with memorandum record of receipt. The memorandum of receipt of check was retained here.

Step 8: The letter was received in the card room.

Step 9: An abstract was pulled.

Step 10: A charge-out was made and assigned to the Drafting Office.

Step 11: The letter was received by the drafting officer with abstract attached.

Step 12: The flimsy file was pulled from the card room.

Step 13: A telegram to Bucharest was prepared and a confirming letter to Moscow was prepared.

Step 14: A letter to the steamship agency was prepared, acknowledging receipt of check.

Step 15: A memo to the Passport Division was prepared and an abstract card added.

Step 16: The letter was received in the Office of the Assistant Chief, abstracts were detached and sent to card room. The Assistant Chief signed the mail and kept a statistical record.

Step 17: The mail went to the mail distribution desk, where the letter was detached and sent to letter-folding room.

Step 18: The letter was folded.

Step 19: It went back to the Seventeenth Street building where it was received at the distribution desk and sent to the mail room. Memo record was also kept at the distribution desk of the telegram sent out.

Step 20: The letter was received in the mail room in a sealed envelope.

Step 21: The envelope was opened.

Step 22: The letter was received by the chief of special deposit unit who checked the original deposit remittance to see if it was actually deposited. He initialed the outgoing telegram and memorandums, also made another memorandum record of telegram.

Step 23: The assistant chief also initialed it.

Step 24: It then was sent back over to the main State building, where it was received in coordination review, where it was reviewed for protocol, and so forth, and to determine that all interested divisions had seen initials.

Step 25: It was received in the code room and telegram was dispatched.

Step 26: The file was received in mail room and confirming letter to Moscow was detached.

Step 27: It then went to the Division of Communication and Records.

Step 28: It was assigned to one of nine examining units.

Step 29: A file number was affixed in pencil.

Step 30: It was received by catalogs distribution point and assigned to one of six sections.

Step 31: It was received by the supervisor of section and assigned to carder.

Step 32: It was carded for each piece of correspondence showing (a) where sent, (b) date and number of instrument, (c) file number, (d) summary, (e) drafting officers initials, (f) office where returned, (g) initials of clerk typing (this prepared in duplicate).

Step 33: It was then received for indexing where the file number previously affixed in pencil was typed in large type.

Step 34: A review was made of all file actions, index cards were sorted.

Step 35: The letter was filed in permanent folder, it being decided that no other routing was necessary.

In the course of these 35 steps of processing, this ordinary letter traveled twice through each of three buildings. While no count was taken of the actual number of hands, or man-hours involved, or estimate made of total cost of handling this one ticket agency's request, my best guess is that such processing would take 30 days.

sions. The House bill (H.R. 5653) was introduced by Representative Hartley, and the Senate bill (S. 2237) by Senator Ives of New York.

The bill would amend subsection (b) of section 6 of the Longshoremen's and Harbor Workers' Compensation Act to read:

"(b) Compensation disability shall not exceed $40 per week and compensation for total disability shall not be less than $22.50 per week: *Provided, however,* That if the employees wages at the time of injury are less than $12 per week, he shall receive his full weekly wages."

(The present law reads: "Compensation for disability shall not exceed $25 per week nor be less than $8.00 per week: *Provided, however,* That if the employees wages at the time of injury are less than $8.00 per week he shall receive his full weekly wages.")

Paragraphs (1) to (13) of subsection (c) of section 8, as amended, would be amended as follows: (Present provisions are listed in parenthesis)

(1) Arm lost, 400 (248) weeks compensation; (2) Leg lost, 400 (212) weeks compensation; (3) Hand lost, 266 (212) weeks compensation; (4) Foot lost, 205 (173) weeks compensation; (5) Eye lost, 160 (140) weeks compensation; (6) Thumb lost, 80 (51) weeks compensation; (7) First finger lost, 46 (28) weeks compensation; (8) Great toe lost, 38 (26) weeks compensation; (9) Second finger lost, 32 (18) weeks compensation; (10) Third finger lost, 25 (17) weeks compensation; (11) Toe other than great toe lost 16 (8) weeks compensation; (12) Fourth finger lost, 24 (7) weeks compensation; (13) Loss of hearing: one ear 60 (52) weeks compensation both ears 260 (200) weeks compensation.

Subsections (a) to (e) of section 9, as amended, would be amended:

(a) To raise the maximum funeral allowance from $200 to $400;

(b) To increase from 35 to 50 per centum of the average wages of the deceased, the amount paid to surviving wife or husband, with 2 years compensation upon remarriage, with 10 per centum of such wages for each child. In case of the death or remarriage of the surviving parent the amount paid to a surviving child would be increased to 50 per centum (present law provides 15 per centum), if more than one child the compensation

(Continued on Page 48)

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SS SEA HAWK . . . Overhead cranes. Comparative tests of the performance of overhead cranes shows this type to be only 63% as efficient as the cargo boom and burton on light drafts, but in handling heavy lifts the overhead is faster than the burton method.

GENERAL CARGO HANDLING-- DEVELOPMENTS AND SOLUTIONS

AN ANALYSIS OF GENERAL CARGO HANDLING PROBLEMS

Part I of this article ran in the March issue of The LOG.

Shipboard Cranes

Without regard to type or operating principle the important advantages that may be found in shipboard cranes are:

(1) *Spotting*—Their ability to either pick up or land cargo over a wide area either in the hatch or from the pier apron by reason of their ability to quickly adjust their position of hoist mechanically.

(2) *Adjustments*—The point of hoist in crane operation is quickly modified without the use of hand labor and without lengthy detentions.

(3) *Readying*—Cranes may be more rapidly made ready for working cargo from their secured positions than booms.

(4) *Safety*—Cranes because they are permanently rigged are of less potential danger through accidents by misjudgment than booms which are subject to constant modification and adjustment of arrangement and setting.

(5) *Operation*—Cranes provide a smooth operation not subject to jerky, uncontrolled swinging of the draft as is occasioned in the burton operation.

(6) *Labor*—Cranes can be provided in designs such as to be simpler for stevedores to operate than our present boom arrangement.

Also cranes without regard to type have a number of disadvantages which should be considered. They appear to be:

(1) *Weight*—Cranes may become excessive in weight due to necessary heavy bracing of the boom to withstand all conditions of operation as are now found in the burton operation, such as sideloads due to acceleration and rotating and dragging of cargo which may remain a factor on cranes unless fullest advantage of accesses to holds with maximum aid through spotting is taken.

(2) *Machinery*—Whether gantry or rotating, powerful machinery is needed to operate the additional weight which must be carried with the draft if cranes are used.

(3) *Operation*—The problem of designing cranes so as to serve both sides of the vessel with a single piece of equipment if solved will greatly increase the weight and mass of the crane through the need for additional strengthening as a result of the additional extension necessary to place the hook outboard with practical outreach.

(4) *Maintenance*—Cranes will undoubtedly provide a more complex maintenance problem than conventional cargo gear.

(5) *Safe working loads*—The provision of shipboard cranes with the safe working load generally desired by the industry without excessive weight and expense will be difficult.

(6) *Expense*—Cranes when mentioned bring up the question of excessive expense. It remains to be seen if their improvement of the cargo handling operation will offset their additional initial outlay as compared with booms and winches.

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Shell scientists believe you can profit by knowing about

SHELL TALONA OIL

developed to be the world's finest heavy duty oil

Figure what oil breakdown can cost you

With sludge, carbon and lacquer come ring-sticking . . . lowered efficiency and engine wear. And your cost is more than repair and replacement. The *time out for overhaul* runs operating costs way up . . . and cuts profits way down.

Nine years work went into Shell Talona Oil

A hundred or more formulas were developed and tested by Shell Research to find ways to strengthen oil . . . help it resist acid, sludge, carbon and lacquer formation. Yes, and *reduce engine wear.*

One oil, now marketed as *Shell Talona Oil,* was in a class by itself. In the most grueling tests, Shell Talona Oil kept sludge to a harmless minimum; kept bearings free from corrosion; kept pistons and rings virtually free of carbon and lacquer deposits. And as for wear —it couldn't be measured by ordinary standards on pistons or cylinder walls.

It pays off to you this way

In high speed Diesel and heavy duty gasoline engines, Shell Talona Oil promises less engine wear . . . longer operation at peak efficiency. Fuel economy should improve. And with proper care of your air cleaners and oil filters, periods between overhauls should lengthen considerably.

Ask your Shell representative for Shell Talona Oil. It's on sale now—and there's absolutely no other like it.

ARE YOU ABSOLUTELY SURE YOU ARE GETTING ALL THAT'S NEW IN LUBRICATION?

Your Shell Lubrication Engineer can make a complete study and analysis of your plant and machines . . . give you engineering counsel, advice on new lubricants and their application . . . help you set up schedules and controls for each and every machine. For that kind of service, call in your Shell Lubrication Engineer.

SHELL

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Overhead Cranes—S.S. SEA HAWK

Comparative tests of the performance on the ss SEA HAWK were made in New York in the Spring of 1946. Facts established with reference to overhead cranes of the jib type were:

(1) The 16′ outboard extension of the jibs made the SEA HAWK a vessel of special type, restricted in the use of terminal facilities. There are many piers in New York, for example, without aprons this wide and some only having a narrow string piece.
(2) The overhead crane is only 63% as efficient as the cargo boom and burton on light drafts.
(3) Although in handling heavy lifts the overhead crane is faster than the burton, the drift in the overhead crane is not sufficient for the handling of a heterogeneous general cargo.
(4) It permitted spotting of cargo anywhere in the wake of the hatch but could not be used to drag cargo from the wings or ends.
(5) It placed operators in a position where they had a direct view of operations being conducted at the hook, both in the hold and on the pier.
(6) The change over from light to heavy drafts was easily accomplished.
(7) It kept cargo under better control as a result of straight pick up.

Improvements of Conventional Cargo Handling Rig

There is no need to take time to discuss the advantages of having the topping lift of conventional cargo gear reeved permanently on a winch drum. They are both obvious and well accepted.

In noting the most important features of the topping lift winch it is desired to point out that although many operators have realized their value and are installing them, opinion varies as to the most desirable and economic arrangement. In order of their greatest effective use the writer considers the methods being used to provide a winch for topping lifts as follows:

(a) Separate topping lift winch of the same specification as the cargo winch thus providing interchangeability as well as topping and lowering ability under full load.
(b) Double-drummed winch with ship and topping lift on the same winch thus providing topping ability under full load although interchangeability is not present.
(c) Topping winch for setting booms under no load.

Special Cargo Handling System

Further to the material so far presented in this report there has been proposed a great number of other ideas for improved cargo handling. For the most part however they are ideas applicable only to special problems, trades or types of shipment.

Ocean Railway Ferry—A Seatrain type operation for the carriage of freight cars in the domestic coastwise trade featuring a two level elevator in the vessel for the handling of the cars. Last cars loaded remain in the elevator for stowage.

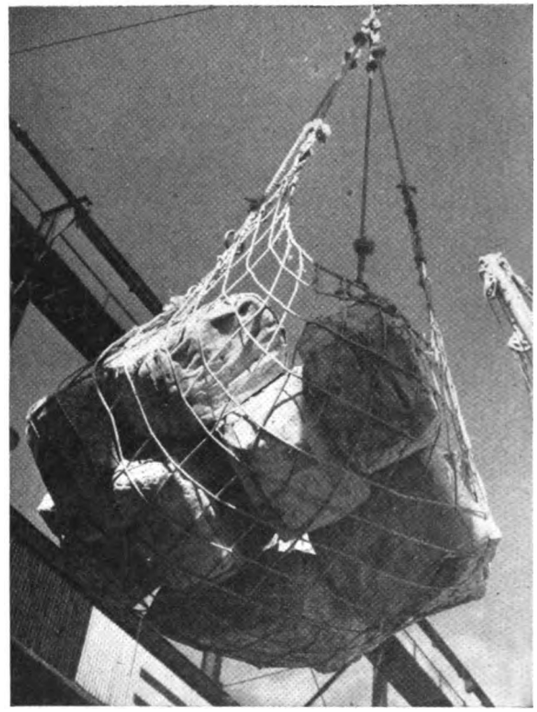
Ship and Shore System—Another elevator operation utilizing cargo containers of 15 tons capacity and palletized loads which are worked to the vessel by pier elevators, conveyor-like trackage in the pier floor, and shipboard elevators.

There are others but for the most part as previously pointed out they have extremely specialized application to the movement of goods.

Conclusions and Recommendations

With reference to developments in general cargo handling equipment that have been offered as improvements, it is firmly believed that there have been few sufficiently moderate for immediate application to vessels now in service. Insofar as those developments that have been made and might apply to new construction it is felt that most of them are such extensive departures from the conventional equipment and design that considerable study will be required before their final acceptance. It is recommended that, the Maritime Commission being greatly concerned with the ramifications of constantly increasing general cargo handling costs, undertake to conduct detailed, concentrated, study, both concerning the possible economies of and the design of all recommended and proffered solutions.

There is no doubt that most vessel operators and designers are not in a position to spend time and money on extensive experimentation. It is believed that studies, when they reach a proportion of requiring test equipment and funds for the construction and testing of such equipment, should be conducted under the supervision of the Maritime Commission with the aforementioned vessel operators and designers in close attention and consultation.

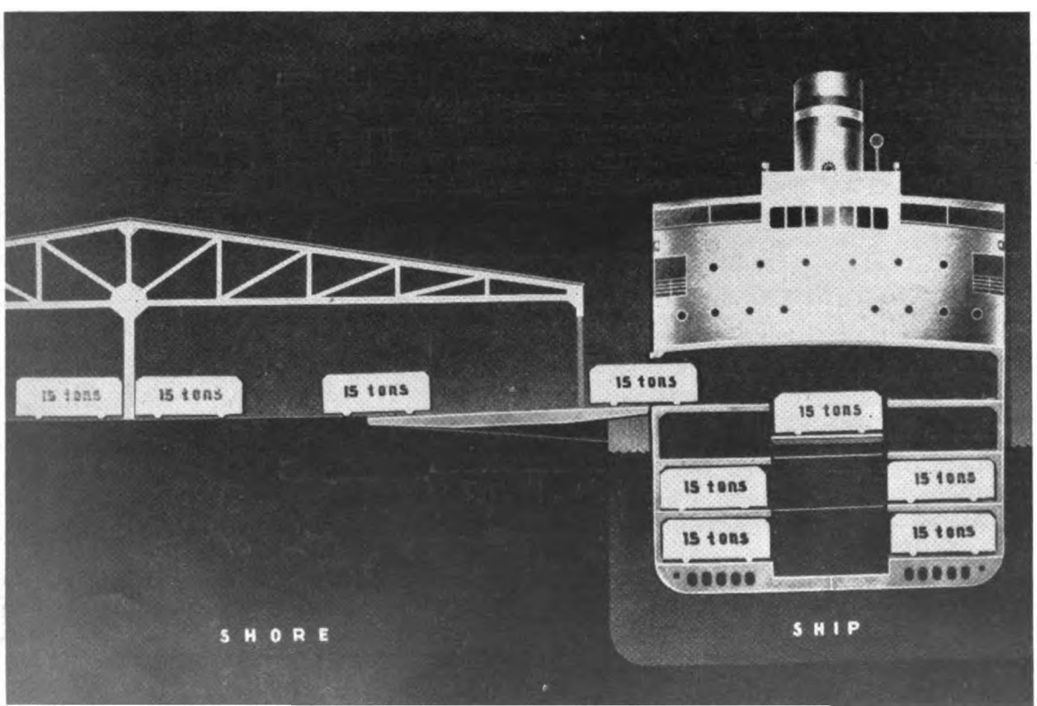


A Palmer Picture

CONVENTIONAL CARGO HANDLING GEAR—there is room for improvement here through hatch arrangement, topping winches, improved types of winches, and increased stevedore efficiency.

SHIP TO SHORE . . . A specialized carrier. An elevator operation utilizing cargo containers of 15 tons capacity and palletized loads which are worked to the vessel by pier elevators, conveyor-like trackage in the pier floor, and shipboard elevators.

A Palmer Picture



Washington Reporting

(Continued from Page 45)

would be 50 per centum plus 10 per centum for each additional child, such amount not to exceed 80 per centum of such wages (present law places 66-2/3 per centum limitation on compensation);

(c) In the case of no surviving wife or dependent husband, the support of one child would be increased from 15 per centum to 50 per centum, with 10 per centum in addition for each additional child, with the total not to exceed 80 per centum of such wage. (Present law limits its compensation to 66-2/3 per centum of such wage.)

(d) In the event of no surviving wife,

(Continued on Page 57)

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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

San Francisco Port Engineers Establish Attendance Record

A record turnout of seventy persons attended the March meeting of The Society of Port Engineers, San Francisco, to hear Harry Gamlen, founder, president and chief engineer of the Gamlen Chemical Company, present a paper on "How to Get the Most Out of Your Fuel Oil Dollar" or "What Price Water and Sulphur in Fuel Oil?"

Mr. Gamlen illustrated his talk with slides and participated in a lively question and answer period following the paper.

The April meeting of the San Francisco engineers, on the seventh of this month, will be devoted to the subject of soot removal, with R. L. Dill of the Diamond Power Specialty Company, delivering the talk.

Marshall T. J. Garlinger, chairman of the society's program committee, announces future programs this year will include a talk on propulsion lubrication by E. F. Griep of the Standard Oil Company of California; a presentation on boiler feedwater from the Dearborn Chemical Company; motion pictures telling the story of Bethlehem's wartime shipbuilding; a film prepared by the Foster Wheeler Company; a talk on wire rope; in August a discussion on the points a port engineer should know about bottom paint; a slow-motion firebox picture by Combustion Engineering Company; a talk on the uses of Fiberglas aboard ship and a program on dynamic balancing by Jack Crose of the Gisholt Machine Company. Dates for these will be announced later.

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Paul Gaudin Valedictory Praises LA Port Engineers

A high tribute to the aims and accomplishments of The Society of Port Engineers, Los Angeles, was paid by Paul V. Gaudin, American Pacific Steamship Company, when he retired as president at the March meeting.

"I wish to express my sincere thanks and appreciation to the members for selecting me as their first president," he said. "It was a privilege and pleasure to have been chosen as the head of an organization composed of such a fine group of technical men.

"In addition to the many benefits, too numerous to mention here, the Society offered me the opportunity of making the acquaintance and becoming associated with a fine group of marine men.

"In addition to bringing the technical men of the marine industry closer together, the Society has always provided highly entertaining and educational programs and is undoubtedly contributing much to the marine industry. As I see it, this is a worthwhile organization and should receive the support of every marine man."

At the March meeting, the program and dinner were sponsored by the Jabsco Pump Company, Burbank, Calif., through Martin & Turner, Wilmington, marine sales representatives.

A highlight of the evening was the presentation by the Society of a ship mantle clock to Honorary Member Harry J. Summers, recently retired as principal surveyor at Los Angeles harbor for the American Bureau of Shipping. Mr. Summers was voted a life membership and his successor, John R. Black, was presented with an honorary membership.

President Gaudin turned the gavel over to his successor, Joe Wosser, Matson Navigation Company.

SAN FRANCISCO PORT ENGINEERS . . . Top row, left to right: The Board of Governors of the San Francisco Society—Clockwise: JAMES A. RIEMERS, secretary; P. H. THEARLE, U. S. Army Transport Service, president; MARSHALL T. J. GARLINGER, Army Transport; RAY SAMPLE, Matson Navigation Company, VINCE FOELL, United States Lines; WILLIAM BILLINGS, Pope & Talbot Line; IRA CHAPMAN, American President Lines; E. J. GRAFF, Grace Line, and JOSEPH F. GISLER, Joseph F. Gisler Company; a new face at the San Francisco meeting—ERNIE JOHNSON, Pacific Tankers; former port engineer turned shipbuilder—H. T. (Jim) HILL, formerly with the Interocean Line, and F. J. SMITH, heads of the new California Ship Repair Corporation at the foot of Washington Street, Oakland.

Bottom row: GAMLEN CHEMICAL MEN at the SF March meeting: left to right, JACK BUTLER, ALLEN GAMLEN, HARRY GAMLEN, TOM CONNELL, LEONARD GROVES, WALTER FUCHS and PAUL HOLLOWAY. In shirt sleeves, HARRY GAMLEN talks before the San Francisco port engineers.

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NEW YORK MARINE PORT ENGINEERS . . . Left to right: CAPTAIN LEONARD FRISCO, USNR, Merchant Marine Naval Reserve Program Officer for the Third Naval District, addressed the February meeting of the Society, urging them to join the Naval Reserve and see that as many of their men aboard ship as possible hold Naval Reserve Commissions. Seated on Captain Frisco's right is CAPTAIN JOHN MOCKRISH, USNR, Field Officer for the MMNR, Third Naval District, and on his left COMMANDER B. C. EDWARDS, President of the Society of Marine Port Engineers, New York, Inc.; CAPTAIN EDWARD C. HOLDEN, USNR, Commander of the American Legion Hague Post, addressing the members on the threat of Communism on the waterfront; S. M. ROSAMOND, General Manager, Boland Machine and Mfg. Co., New Orleans, was a guest at the New York Port Engineers' Society February Meeting.

THE SOCIETY OF PORT ENGINEERS

New York Society Appoints Committees

The Society of Marine Port Engineers, New York, Inc., at its February meeting, had as guest speakers Captain Leonard Frisco, USNR, and Captain Edward C. Holden, USNR. Captain Frisco, who is in charge of the Merchant Marine Reserve for the Third Naval District, discussed the merits of the present Reserve program for Merchant officers. Captain Holden, Commander of the Hague Merchant Marine Industries Post of the American Legion, spoke on the dangers of Communist activities on the waterfront, and outlined the actions being taken by the American Legion to combat this element.

The Society also appointed the new 1948 committees. These committees are as follows:

LEGISLATIVE . . . G. L. Bennett, chairman; W. A. Dunbar, vice chairman; A. J. Ivey; R. A. Lurye; S. Roma; E. J. Tracy.

TECHNICAL . . . T. A. McQuilling, chairman; W. F. Jones, Honorary chairman; F. W. Gaines, chairman tankers sub committee; H. S. Cable, chairman cargo sub committee; E. W. Calmer, chairman passenger sub committee; C. W. Clarke; P. Sisler; L. L. Watts; E. J. Tracy; R. R. Bailey; M. C. Doyle; J. V. Mulcahy; A. C. Lanteri; J. P. Tierney.

INDUSTRY & PUBLIC RELATIONS . . . J. V. Mulcahy, chairman; W. B. Jupp, Honorary chairman; Harlan Scott, vice chairman; H. S. Cable; M. C. Doyle; L. L. Watts.

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William Richards, secretary-treasurer, will work with all committees. E. J. Keane, legal adviser for the Society, will work with the Legislative, Technical, and Industry & Public Relations Committees.

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Membership Certificates to be Issued by Puget Sound Group

Members of the Society of Port Engineers of Puget Sound ordered issuance of membership certificates suitable for framing about letterhead size to all charter and other members according to status at their February meeting.

Program for the February meeting was featured by showing of film "Salvage of the ss DIAMOND KNOT", courtesy of Firemen's Fund Insurance Company, and a showing of the film "Eternally Yours," courtesy of A. M. Byers Company.

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Columbia River Engineers Discuss Port Improvements

Continuing discussions held in January the Society of Port Engineers, Columbia River area, conferred at their February meeting on ways and means to bring about additions to dry dock facilities at Portland in order that ship repair work can be more adequately handled. Consolidation of port bodies in the Columbia river area was also informally discussed.

Entertainment portion of the program was a motion picture in color presented by Standard Oil Company of California.

Port Stewards Plan Annual Picnic

Sunday, June 20, has been set as the date for the annual picnic of the Port Stewards Association of the Pacific Coast and the place designated is the Tourists Club, Oakland, the scene of last year's successful picnic. Dewey Paine, of Coastwise Line, is chairman of the picnic committee, appointed by Timothy Mullin, American President Lines, president of the association.

President Mullin also named Frank B. Ingham, United States Lines, as chairman of a committee in charge of the association's annual golf tournament this coming fall. L. W. Beckendorf, W. R. Chamberlin & Company, was appointed chairman of the association's new publicity committee.

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Jack McCartney, San Francisco, recently resigned as labor relations man for the stewards' department for the Pacific American Steamship Association to join the American President Lines as supervisor of service in the catering department. He sailed on the second trip of the ss PRESIDENT CLEVELAND and will go out on the maiden voyage of the ss PRESIDENT WILSON. This new post is described as that of a traveling chief steward.

↕ ↕ ↕

F. R. Starrs, veteran port steward of the Tide Water Associated Oil Company, San Francisco, died suddenly a few weeks ago.

↕ ↕ ↕

Waterman Vessel Strikes North Sea Mine

The Waterman Steamship GATEWAY CITY, under the command of Captain A. E. Sorenson, which sailed from New Orleans in late January struck a mine in the North Sea last month, but was able to make Rotterdam under its own power.

The mishap occurred near the German island of Borkum, a few miles off the Dutch coast.

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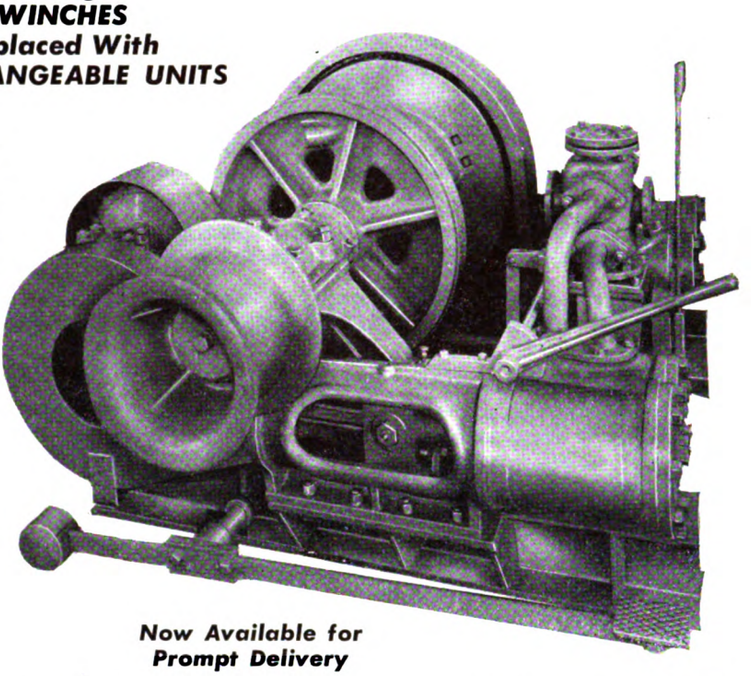

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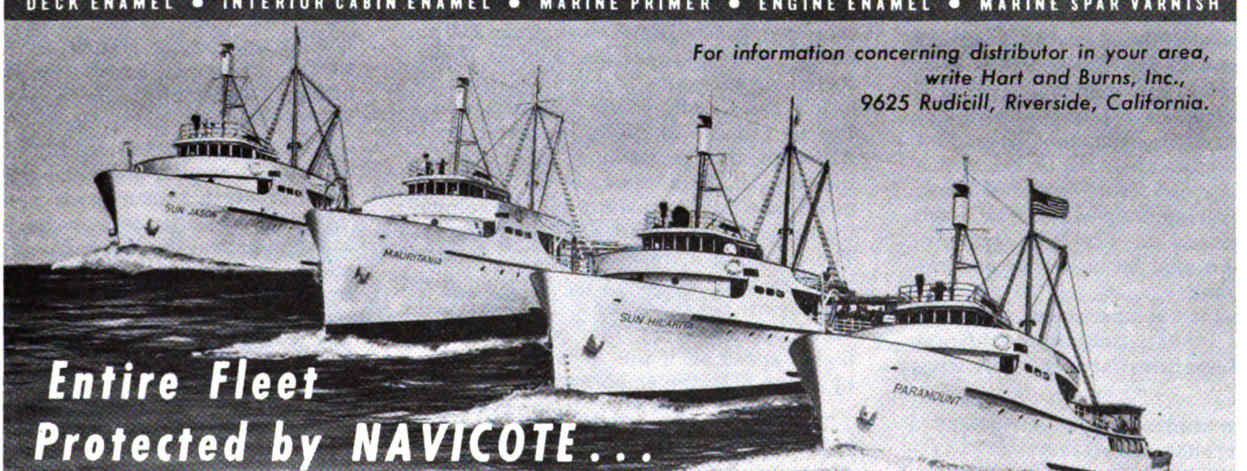

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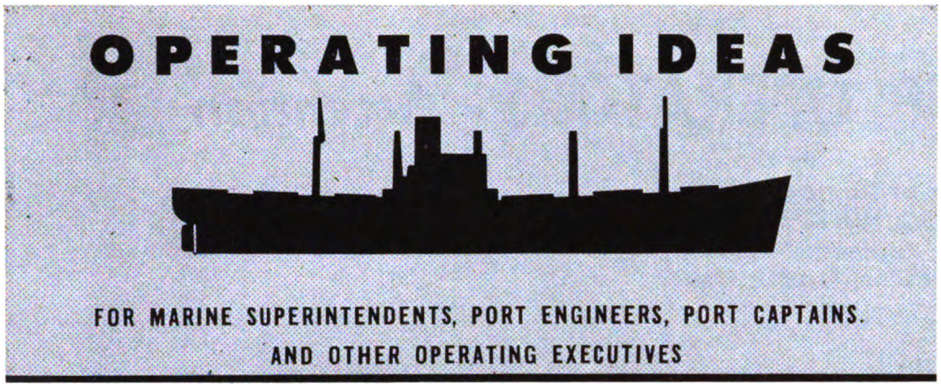

CONSEQUENCES OF LOW TEMPERATURE REFRIGERATION

By JOSEPH J. BUFFONE
Marine Engineer
George G. Sharp, N.A.

The history of marine refrigeration is marked by a progressive lowering of the prevailing compartment temperatures for carrying frozen cargo. Meat, fish and poultry will keep longer and be of better quality if carried at a temperature of 0°F and below than at say 10 or 15°F, which was common not too long ago. Low temperatures, maintained within close limits, will keep meat and poultry good for a year or longer. Non-fat fish kept at 0 to-20°F will keep for about one year. Fatty fish will keep for about six months. To take advantage of the greater assurance to cargo preservation afforded by temperatures below 0°F operators will be tempted to equip vessels with sufficient refrigeration capacity to maintain such conditions.

The maintenance of lower temperatures is expensive both in first cost and operation. At very low temperatures even small changes in the designed compartment temperature will cause considerable differences in equipment sizes, first cost and operation. It is the object of this article to show the consequences of lower compartment temperatures and how much more pronounced the effects of temperature reduction may be in the lower temperature ranges.

Variations in compartment temperatures result in variations in refrigerant suction temperatures and the following conditions:

1. Specific volume of the refrigerant
2. Refrigeration effect
3. Volumetric efficiency of compressors
4. Heat transmission
5. Suction pipe size
6. Compressor horsepower
7. Condenser capacity

Each of these will be discussed in the following. The refrigerant considered is Freon-12 since this is so commonly used on refrigerated cargo ships. However, the analysis applies similarly to other refrigerants.

Temperature and Pressure

The refrigerant leaving evaporator coils under proper conditions of operation is in a slightly superheated condition, i.e., it is a gas and behaves in accordance with Boyle's Law. Therefore, as the compartment temperature is lowered, the temperature and pressure of the refrigerant in the evaporator is also reduced and its specific volume is increased. In the lower temperature range which we are considering the variation in specific volume is large compared with that in a higher temperature range. For example, by decreasing the evaporator temperature from —10 to —20°F the specific volume of saturated Freon-12 increases from 2.00 to 2.47 or .47 cubic feet per pound. If the suction temperature is decreased from 10 to 0°F the specific volume increases from 1.35 to 1.64 or .29 cubic feet per pound. Although the temperature difference is the same in both cases, 10°F, it will be noted how much more the specific volume increased in the —10 to —20°F range. The resulting increase in specific volume requires that the compressor piston displacement be increased. This may be done by operating the compressor at higher speed or, if this is not permissible, by using a larger compressor.

The refrigeration effect, the amount of heat absorbed per pound of refrigerant vapor to become saturated gas, varies with the evaporator temperature, decreasing as the temperature decreases. Assuming that the refrigerant is expanded from a condensing temperature of 105°F the refrigeration effects would compare as follows for 10, 0, —10 and —20°F:

	Evaporator Temperature			
	10°F	0°F	—10°F	—20°F
Heat content, sat. vapor, BTU/lb.	79.36	78.21	77.05	75 87
Heat content at 105°F, BTU/lb.	32.40	32.40	32.40	32.40
Refrigeration effect BTU/lb.	46.96	45.81	44.65	43.47

To compensate for this decrease in refrigeration effect with decreasing evaporator temperature the compressor capacity must be increased to handle a larger amount of refrigerant.

Design of Compressor

It is an inherent characteristic of reciprocating compressors that their volumetric efficiencies go down with a decrease in suction pressure. This characteristic is more pronounced in some compressors than in others and is determined by such features as clearance volume and design of valves. With good design a compressor may develop relatively higher volumetric efficiencies throughout its range of operation but it will still have the basic characteristic of lowered volumetric efficiency with lowered suction pressure, thereby requiring larger compressor capacity to handle sufficient refrigerant.

Except to cite increased heat transmission as an additional factor which contributes to the size of refrigeration equipment and the cost of operation, nothing further need be said as obviously the increase is proportional to the difference between the compartment and outside air temperatures. This is predicated on no change in thickness of insulation for a comparatively small change in compartment temperature. Should an effort be made to reduce the heat transmission load by increasing the thickness of insulation the advantage gained must be balanced against the added investment and the loss of stowage space for revenue producing cargo. Very often conditions do not warrant greater thickness of insulation.

Lower temperatures and the attendant larger specific volumes make larger suction pipe sizes necessary to maintain reasonable velocities and pressure drops. The larger piping results in increased weight, space and cost for pipe, valves, fittings, insulation, pipe supports, etc. Valves and fittings in larger sizes for copper pipe are not as readily obtainable as those in smaller sizes and they sometimes create a procurement problem.

In the foregoing it may be seen that changes in specific volume, refrigeration effect, volumetric efficiency and heat transmission all contribute to some extent in increasing the compressor capacity and power required with reduced compartment temperature. The ratio of horsepower per ton of refrigeration also increases revealing a considerable expenditure of power at lower temperatures. This value is approximately 3.1 at—20°F and 2.5 at —10°F and approaches a value of 1.0 for very high suction temperatures as used for air conditioning systems. The capacity of the compressor, expressed in cubic feet per minute of piston displacement (CFM) is a measure of its size and increases with a reduction in suction temperature, the rate of increase becoming more rapid at lower temperatures. This increase in piston displacement necessitates either a larger compressor or a higher compressor speed.

Volumetric Efficiency

The curves in Figure 1 have been prepared to show the relationship of volu-

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TABLE 1

Assumed Refrigeration Load:	Designed Compartment Temperature 10°F	0°F	—10°F
Heat Transmission, BTU/hr.	5,400	6,000	6,600
Motor Losses, etc., BTU/hr.	6,000	6,000	6,000
Total, BTU/hr.	11,400	12,000	12,600
Suction Temperature, °F	0	—10	—20
Volumetric Efficiency	.64	.55	.45
Refrigeration Effect, BTU/lb.	45.8	44.7	43.5
Compressor Capacity required, CFM	11.4	17	28.8
Compressor BHP	2.0	2.5	3.25
Compressor Capacity at 40°F suction, BTU/hr.	34,200	51,000	86,400
Compressor BHP at 40°F suction	3.1	4.7	7.9

metric efficiency, piston displacement and CFM of refrigerant entering the compressor per ton of refrigeration. These curves are plotted against the compression ratio on which is also indicated the corresponding suction temperature.

The condensing temperature is assumed as 105°F which is common for marine installations. These curves have been extended to include a compression ratio slightly higher than 13 corresponding to a suction temperature of about —35°F. Although these curves extend to a suction temperature too low for practical application for Freon-12 they emphasize the consequences of low temperature operation. It should be noted how the decreasing volumetric efficiency and the increasing CFM of refrigerant required combine to produce a piston displacement curve having rapidly rising characteristics at low temperatures. For instance at —10°F suction temperature, for a 0°F compartment temperature, 17 CFM piston displacement is required per ton of refrigeration; but at —20°F, for a —10°F compartment temperature, 27.5 CFM is required. This is a 62 per cent increase in capacity and may require additional compressors if the added capacity cannot be absorbed by increasing the speed of smaller compressors.

The motor horsepower required must be adequate to drive the compressor at high suction temperatures that prevail during pull down periods when a warm compartment is being cooled. A compressor intended for low temperature operation will have a very high capacity expressed in tons of refrigeration when operating under initial pull down conditions, say 40°F suction temperature. This can be seen by referring to Figure 1. A compressor selected to operate at —10°F suction will have 17 CFM piston displacement per TR. At 40°F the required piston displacement is 4 CFM. In other words this compressor operating at 40°F will develop 17 divided by 4 or 4.25 times as much refrigeration. Now assume that the compressor was selected for —20°F suction temperature and that the piston displacement is 27.5 CFM/TR. At 40°F suction this compressor would develop 27.5 divided by 4 or 6.9 times as much refrigeration. Under pull down conditions the second compressor would develop 62 per cent more refrigeration than the first compressor. This analysis has not considered the additional heat transmission load, 10 per cent, which the lower temperature compressor must absorb. A comparison which takes this into consideration is given in Table 1.

(Continued on Page 54)

WAYS TO CALCULATE THE STABILITY OF CARGO SHIPS

By ROBERT J. TAPSCOTT
Naval Architect
George G. Sharp

Along with other recent refinements in cargo ship design and operation, stability has been getting its proper share of attention. Cooperation between the ship operator and the naval architect is gradually closing the rift between the actual operation of a cargo ship and the operation as visualized in theoretical stability calculations. The stability information and aids available to the ship operator today, enable him to load his ship for sufficient stability, without making it uncomfortably stiff and unnecessarily limiting its payload. Taking full advantage of deck cargo space and optimum distribution of cargo for ease in loading and unloading means increased profits.

Definition

A practical definition of stability is the ability of a ship to right itself when given an angular displacement by some external force, or simply the ability to stay upright in the water. Unless specifically qualified, the term stability is used to mean transverse stability or resistance to listing or rolling sideways. Longitudinal stability, or resistance to trimming is seldom a safety problem.

The equation of stability is $M = GM\ W \sin \theta$, where M is the moment caused by some unbalanced force acting on the vessel, θ is the list caused by this moment. W is the displacement or weight of the ship, and GM is the metacentric height. It is seen from this equation that if we are considering one certain ship floating at a certain displacement, say full load, that the list θ caused by the moment is in inverse proportion to the metacentric height GM; that is, the larger the metacentric height, the smaller the list. Actually only some of the dangers which can cause capsizing are in the form of external moments, such as wind and waves on one side of the ship and shifting cargo. Another and more common hazard is partial flooding of the ship, which usually results in a direct loss of metacentric height.

In any case then, the metacentric height, or GM, is the most important quantitative factor in the measure of stability. The GM is defined as the vertical distance between the center of gravity G of the loaded vessel and the metacenter M. The position of M depends only upon the geometrical shape of the underwater portion of the hull, and, although its position varies with draft, its position for any one draft is determined the minute the final lines of the ship are laid down. The center of gravity G is that of the ship itself and all on board, including cargo, liquids and crew. The naval architect can control to a certain extent the center of gravity of the light ship by his design and choice of materials, his purpose always being to place it as low as possible, but once construction of the vessel is completed, its center of gravity is fixed. However, the position of center of gravity of the loaded ship can be varied widely by the operator in the distribution of the cargo.

Responsibilities of the Naval Architect

The naval architect's responsibilities fall into two categories:

1. Designing the ship to meet accepted criteria for stability.
2. Supplying stability data to the operator.

The United States Coast Guard has no regulations for the stability of a cargo vessel, but it is customary to design for sufficient stability to enable the ship to stay upright when one hold or the machinery space is flooded, and to provide a positive GM of one to two feet through a normal range of loading. Generally the loss of GM resulting from a flooded hold is greater as the draft is less; hence usually a greater operating GM is called for when the vessel is in a partially loaded condition. For the use of the operator, the stability required for safety can be presented in the form of GM's plotted against draft.

To aid the operator in keeping a constant check on the stability of his vessel, the naval architect usually furnishes statements of stability in certain assumed conditions of loading. Although the ship may seldom if ever be loaded to correspond exactly to these assumed conditions, they form the basis for a quick estimate of the stability in actual condition.

(Continued on Page 54)

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OPERATING IDEAS

FOR MARINE SUPERINTENDENTS, PORT ENGINEERS, PORT CAPTAINS AND OTHER OPERATING EXECUTIVES

Low Temperature Refrigeration

(Continued from Page 53)

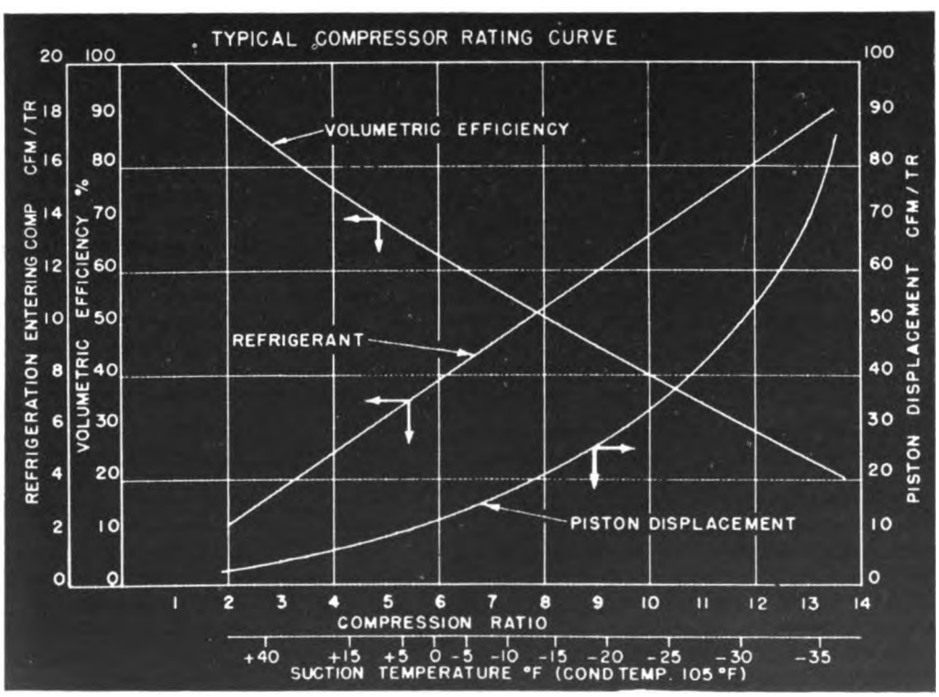
A study of this table will reveal how much greater is the size of equipment and power required when the compartment temperature is lowered only 10°F from 0°F to —10°F than when the temperature is lowered the same amount from 10°F to 0°F. It should be noted how much greater is the BHP under initial pull down conditions, 40°F suction temperature, for a compressor sized for lower temperatures. Since it is on the basis of power required during pull down that motor horsepower is determined, the larger size motors required becomes quite obvious.

Brine System

So far only a direct expansion system has been considered. In a brine system the difference in temperature between the compartment and the refrigerant is greater by about 10°F, due to the intermediate cooling of the brine. Therefore, the equipment sizes and powers will be greater in a brine system than a direct expansion system although the compartment temperature is the same.

The condenser capacity is also affected by the compartment temperature. It will be noted in Table 1 that with comparatively little change in cargo refrigeration load, due to variations in heat transmission, the compressor capacity at initial pull down conditions varies widely for 10, 0 and —10°F compartments. Since a condenser must be of sufficient capacity to handle maximum load of the compressor it will be appreciated what the BTU/hr capacity for each condition should be, approximately 25 per cent more than the compressor capacity. If the condenser is undersized, the compressor will short cycle at high pressure and it will require to be operated at lower speed or with the cylinder bypass open.

Besides the technical and economic considerations required for low temperature refrigeration, one must also consider the practical need for low temperatures. It has been found that it is better to maintain a slightly higher but even temperature in a compartment than a temperature which fluctuates widely even though it be lower. Low temperature in itself is inadequate for preservation of food in best condition unless the controls are able to maintain steady conditions. Another important consideration is the handling of refrigerated cargo prior to stowage on a vessel. Shore side facilities are either limited in capacity or entirely lacking and it is not uncommon for refrigerated cargo to stand for some time exposed to a high ambient temperature and suffer a considerable temperature rise. Subsequent low temperature refrigeration during the period of overseas transportation does little good in combating the bad effects of such exposure prior to loading; and until such shore side facilities are improved, further reductions in prevailing compartment temperatures are not pressing.



Stability of Cargo Ships

(Continued from Page 53)

A statement of stability is usually in the form of a booklet. One page is allowed for each assumed condition, which is worked out on a form similar to that described in "A Form for Trim and Stability Calculations" in the March issue of The LOG.

The assumed loading conditions are chosen to approximate the anticipated actual conditions of loading to which the ship may be subjected in service. A vessel carrying several different types of cargo on a complex itinerary, may require many, but for the normal general cargo ship, four or five conditions suffice. For the Victory class of cargo ships, the Maritime Commission prepared a stability booklet containing loading and stability statements for nine conditions: Full Load Departure, Full Load Half Burned Out, Full Load Arrival, Full Load Departure with Double Bottom Tanks Empty, Full Load Arrival After Departing With Double Bottom Tanks Half Empty, Half Cargo Departure, Half Cargo Arrival, No Cargo Departure, and No Cargo Arrival.

Responsibilities of the Operator

When a vessel has been completed and delivered to the operator, the naval architect has exercised all his control over stability and the operator is in control of the remaining factor, the loading. The operator's responsibility of maintaining a sufficient GM would be a simple one but for his additional responsibility of using his ship to the best economic advantage. The two responsibilities together require that both the personnel in charge of loading the ship, and the captain, in charge of the ship at sea, have a pretty good idea of the actual GM and the GM required for safety throughout the voyage, and that the margin between the two be utilized if possible. It is expensive to carry salt water ballast across the ocean, to leave deck cargo at dock, or to load steel in a hold when it is to be unloaded at the first stop.

There are several methods that may be used to estimate the actual GM of the loaded ship. Some of these are:

1. Comparison with the most similar condition in the stability booklet.
2. Calculating the GM for the ship as actually loaded, using a form as described in the March issue of The LOG.
3. Elementary inclining experiment.
4. Approximate rolling formula.
5. GM meters.

The GM of the vessel in port before sailing may be estimated, under the proper conditions, by any of the above methods, but the approximate rolling formula and some GM meters depend on the ship having an appreciable roll. To estimate the GM at sea, any of these methods except the inclining experiment may be used.

Cargo Distribution

The most important difference between the actual loading condition and the closest assumed condition in the stability booklet will probably be in the cargo distribution. The assumed condition usually considers a homogeneous cargo stowed uniformly over the hold volume, from the face of the frames, to the underside of the deck beams. Often it is impossible or unnecessary to stow cargo to the deck

(Continued on Page 60)

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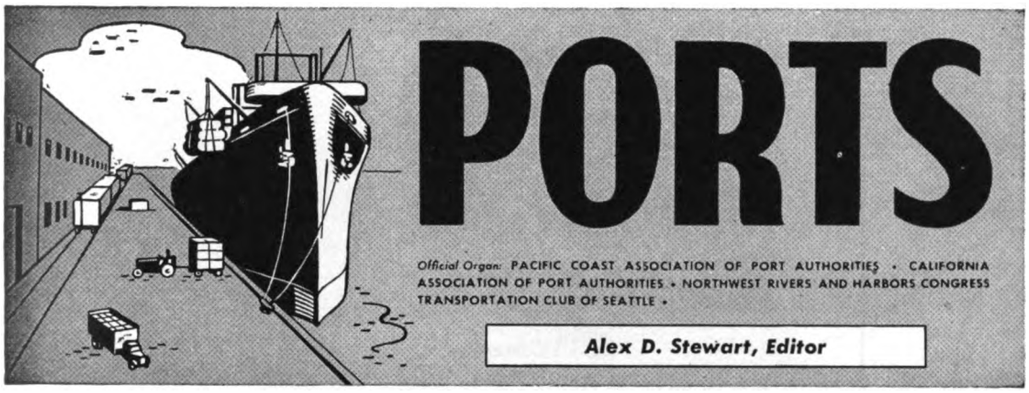

PORTS

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Alex D. Stewart, Editor

Pacific Coast Unites Action In Foreign Trade Drive

Maitland Pennington's charges that "the Pacific Coast was no longer the 'Gateway to the Orient'" has produced a united action by all Pacific Coast ports. Mr. Pennington, vice president of Pacific Transport Lines, first voiced his declarations at a meeting held in Los Angeles in December of the California State Chamber of Commerce's Transportation Committee.

It was the facts and figures he produced showing the extent the Pacific Coast ports were losing their share of Pacific commerce through failure to solicit trade, labor unrest, slow and complex procedures of handling port terminal charges and the failure of coastal shipping interests to "get smart" and do something about the situation, which led to the meeting held in San Francisco, February 20.

The keynote address of this meeting of the Western Transportation Conference, sponsored by the California State Chamber of Commerce, was Mr. Pennington's presentation of "Development of Foreign Traffic Via Pacific Coast Ports". He repeated the charges and presented recommendations to alter the situation, urging organization of the executive committee to take steps in solving the problems.

Speakers from each segment of the transportation field gave their individual viewpoints of Mr. Pennington's opinions and on the over-all problem of the Pacific Coast not getting what may be its fair share of export-import commerce.

Hillman Luedemann, vice president of Pope & Talbot Lines commented for the steamship lines on behalf of the Northwest; speaking for the rails was W. W. Hale, vice president of freight traffic for Southern Pacific Company; Milo W. Bekins, president of Bekins Van & Storage presented the trucking company's views. Terminal operators were represented by George D. LaRoche, general manager, Commission of Public Docks, Portland, Oregon, on behalf of public terminals; Charles Howard, president of Howard Terminals, Oakland for the private terminals; Thomas Coakley, president of the Pacific Coast Association of Port Authorities summarized the viewpoints of the various industries.

The discussion of rate structures played a prominent part in the conference with the steamship and railroad spokesmen reluctant to commit themselves to a specific program with regard to absorbing in their rates the cargo-handling charges, although they did pledge their support to the organization. Public and private port officials strongly supported Mr. Pennington's views.

Labor unrest was also attacked with evidence showing the destructiveness of waterfront strike anticipation. This anticipation and the waterfront strife which is publicized (sometimes erroneously) by eastern interests is discouraging shippers from using Pacific Coast ports.

The session concluded with the 18-man executive committee, representing steamship, port and terminal authorities, railroads, airlines, trucking and freight forwarders, from the areas of Puget Sound, Columbia River, Northern California and Southern California, directed to formulate a program to develop the movement of foreign traffic via Pacific Coast ports. The committee has been requested to give their first attention to the following three points:

1. Means and methods of obtaining for Pacific Coast ports their fair and reasonable share of relief, stockpiling, and commercial cargoes outward bound and also import cargo.
2. Study of the effect of accessorial charge upon import-export traffic.
3. Advise shippers of the advantages of shipping foreign traffic via Pacific Coast ports.

The conference approved the recommendation that it reconvene at the call of the chairman for the purpose of reviewing their progress.

The executive committee is composed of the following representatives:

PUGET SOUND—A. R. Lintner, President, American Mail Line, Seattle, Washington; Ed Soergel, VP-Traffic, Chicago, Milwaukee, St. Paul & Pacific Railroad, Seattle, Washington; Colonel W. D. Lamport, General Manager, Port of Seattle, Seattle, Wash.

COLUMBIA RIVER—Hillman Luedemann, VP, Pope & Talbot, Portland, Oregon; A. J. Seitz, VP-Traffic, Union Pacific Railroad; George D. LaRoche, Gen. Mgr., Commission of Public Docks, Portland, Oregon.

NORTHERN CALIFORNIA—Maitland S. Pennington, VP, Pacific Transport Lines; W. W. Hale, VP-Freight Traffic, Southern Pacific Co.; Charles Howard, Howard Terminal, Oakland.

SOUTHERN CALIFORNIA—S. S. Harlow, American-Hawaiian Steamship Co.; J. J. Grogan, VP-Traffic, Santa Fe Railway Co.; Arthur Eldridge, Gen. Mgr., Los Angeles Harbor Dept.

From the north for trucks—Leland James, President, Consolidated Freightways, Portland, Oregon.

From the south for trucks—Joseph Robertson, Robertson Drayage Co.

From the Pacific Coast for Airlines—James L. Murphy, Jr., Asst. to President, United Airlines.

For the Freight Forwarders—J. E. Lowden. J. E. Lowden Co., San Francisco.

M. B. Silberberg, chairman of the state chamber transportation committee will head the executive committee with John E. Cushing, president of Matson Navigation Company, the vice-chairman.

‡ ‡ ‡

San Francisco Wins Foreign Trade Zone

San Francisco's twelve year-old fight for a Foreign Trade Zone ended in victory March 10th when Secretary of Commerce W. Averill Harriman, in a formal ceremony at Washington, D. C., presented the charter for the zone to Thomas Coakley, president of the California Board of State Harbor Commissioners.

Mark H. Gates, secretary of the California harbor board, was present at the ceremony in his capacity as chairman of the Foreign Trade Zone Committee of the Pacific Coast Association of Port Authorities.

The charter provides the Foreign Trade

FOREIGN TRADE ZONE NO. 3 . . . San Francisco joins New York and New Orleans with the establishment of a Foreign Trade Zone. Shown here is THOMAS COAKLEY, left, President of the San Francisco Board of Harbor Commissioners receiving from Secretary of Commerce W. AVERILL HARRIMAN a charter for the zone for the Port of San Francisco.

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Zone shall commence operations within 90 days of its issuance. Thus, technically, June 10 will be the opening date and a public ceremony will be held later that month to impress upon importers and exporters at home and abroad that the San Francisco Foreign Trade Zone is at their service.

This operation is technically designated as Foreign Trade Zone No. 3, it being the third such facility established under the Foreign Trade Zone act passed by Congress in 1934. New York has Zone No. 1, established in 1937 and New Orleans was allocated Zone No. 2.

In its initial stage, the San Francisco zone will occupy Sheds B and D on Pier 45, together with berthing space on the west side of the pier and spur track facilities on the east. Pier 45 is on the site of the early day historical Meigg's Wharf.

The entire area will be protected by a high steel fence and customs guards will man the gates at all times. General Robert H. Wyley, manager of the port, announces contract for the zone barriers and the offices will be let at once. West Coast Terminals, Inc., formerly occupants of Pier 45, have moved to Pier 33.

The California Legislature has been asked to appropriate $172,346 to establish and finance the zone.

San Francisco's foreign trade project is part of a comprehensive plan, including a $55,000,000 World Trade Center, aimed at the development of Far Eastern and Latin American trade.

Other west coast ports, including Los Angeles and Seattle, are considering the advantages of Foreign-Trade Zones in their respective harbors.

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Binnings Elected President N. O. Harbor Commissioners

E. S. Binnings was elected president of the Board of Commissioners of the Port of New Orleans to succeed H. Grady Meador. F. Kirby Longino was chosen vice-president to succeed A. B. Freeman, while Meador replaces Longino as secretary and Robert L. Simpson succeeds Binnings as treasurer.

The new president said the engineering department is working on definite plans for improvements and additions to New Orleans port facilities this year. While it is hoped that the "urgently needed" improvements can be made in the near future, the Board of Commissioners also is making comprehensive long-range plans based on the completion of the proposed channel to the sea, and is centering every effort on this project and the Industrial Canal, he added.

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Port Development Committee Formed at Seattle

Organized under the world trade department of the Seattle Chamber of Commerce, chamber president E. L. Skeel has asked leading Seattle shipping men to function as a port development and maritime committee. The committee is headed by C. H. Carlander, president, Puget Sound Freight Lines. Worth Fowler, American Mail Line; and Ben C. Wilcox, Socony Paint Company, have been named vice-chairmen. Other members of the committee are: R. L. Albin, Ames Terminal; W. P. Alvick, Puget Sound Stevedoring Company; H. M. Burke, American-Hawaiian Steamship Company; D. M. Dysart, General Steamship Corporation, Ltd., Walter Green, Puget Sound Navigation Company; Harrison J. Hart, Puget Sound Tug and Barge Company; R. J. Huff, Puget Sound Bridge and Dredging Company; R. E. Landweer, custom broker; M. M. Stewart, Olympic Steamship Company; H. N. Peterson, Alaska Steamship Company.

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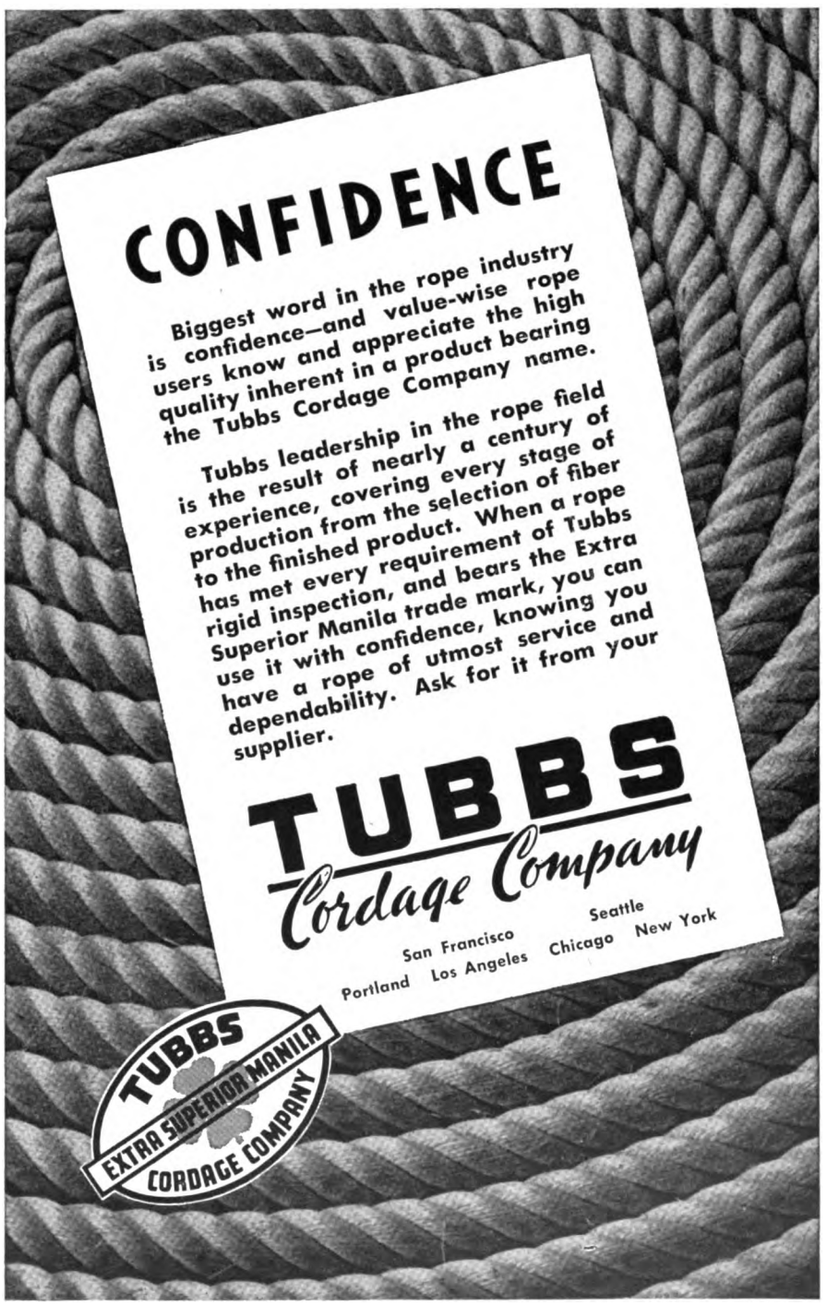
Washington Reporting

(Continued from Page 48)

child or dependent husband of the deceased, or if the amount paid to the surviving wife or dependent husband is less than 80 per centum of the weekly wage of the deceased, then for the support of parents, grandparents, grandchildren, brothers and sisters of the deceased, if dependent upon the deceased at the time of injury, 50 per centum of such wages increased by 10 per centum for each dependent in excess of one would be allowed. In no case would the aggregate amount payable under this section exceed 80 per centum. (Present law limits amount to 15 per centum for each grandchild, brother or sister and 25 per centum for each parent or grandparent, the total not to exceed 66-2/3 per centum.)

(e) In computing death benefits the wages of the deceased shall be considered to have been not more than $60 (present law reads $37.50) nor less than $30 (present law reads $12).

Sec. 4. Subsection (m) of section 14 limiting the total compensation under the Act for injury or death to $7,500, would be repealed.



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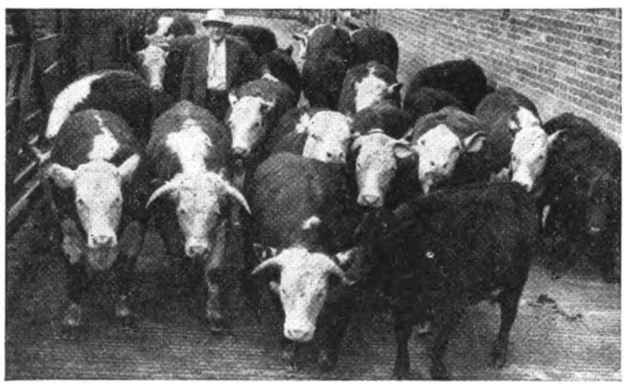

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SPIRITED DISCUSSION of Mr. Pavlik's paper on "Design of Modern Tankers" was spearheaded by J. B. HENDRICKSON, Welding Shipyards, Inc., and S. F. SPENCER, Keystone Shipping Company, at the February meeting of the Philadelphia Section of the Society of Naval Architects and Marine Engineers.

Tanker Design

(Continued from Page 37)

Maximum Permissible Drafts

The determination of maximum permissible drafts under the Load Line Act calls for little comment. It has been resolved into a simple, straight-forward calculation by the regulations of the International Load Line Convention, London, 1930 and much credit is due that body for formulating such a comprehensive, yet readily applicable set of rules.

In many tankers the freeboard deck is designed with no sheer in order to simplify construction. The heights of the poop and forecastle are usually increased toward the perpendiculars to improve seaworthiness and appearance. Where these heights exceed the standard height for erections as required by the Load Line Rules, and the erections are fitted with proper closing appliances, credit may be claimed in the load line determination for a theoretical sheer line as indicated in Fig. 1.

In a vessel with no sheer it is necessary to increase the moulded depth in order to obtain the same drafts as would be assigned to a vessel with normal sheer, the increase amounting to approximately 18″ in a 500 foot ship. Of the three dimensions, length, beam and depth, the latter is the cheapest to increase; and the depth increase is not entirely a penalty as a maximum of cargo cubic is gained thereby and the steel is utilized to a better advantage in the hull girder in the region of maximum bending moments.

The camber employed is usually a broken pitch equivalent to a parabolic camber to rule requirement, and is used to simplify structural fabrication and assembly.

Tonnage Admeasurement Rules

The marine fraternity has long felt the need for a revision of the tonnage admeasurement rules in some such fashion as has been applied to the load line regulations. The tonnage rules are archaic, and in verbiage and illustration hark back to the days of the wooden vessels. In the light of present shipbuilding practices, they are ambiguous, misleading and subject to individual interpretation in many respects.

Be that as it may, it still behooves the designer to be thoroughly conversant with the present U. S. and Panama Tonnage rules, including exemptions and deductions, so that minimum gross and net tonnages will be assigned to a vessel.

The U. S. gross tonnage is used for assessing dry docking fees, port charges, insurance premiums, etc. The U. S. net tonnage is used for tax determinations in foreign trade. The Panama Canal net tonnage is used for assessing the tolls when a tanker is making the transit of the canal.

The net tonnage is determined by subtracting the following tonnage items from the gross: machinery space, steering gear, anchor gear, crews quarters, chart and radio rooms, bosun's stores, etc. Under the U. S. Rules, if the tonnage of the machinery space is in excess of 13 per cent of the gross, the official deduction is 32 per cent; otherwise only one and three quarter times the actual tonnage of the space is allowed. (Danube Rule). The Panama Rules are basically similar to the U. S. Rules but vary in that they only permit use of the Danube Rule for machinery space deduction, and are more stringent in respect to other exemptions and deductions. Therefore, the Panama tonnages are always considerably higher than the U. S. tonnages.

Determination of Cargo Capacities

In regard to the determination of cargo capacities, there has been little improvement in the time tried method of gauging tanks with steel tape and sounding weight and referring the ullages so obtained to a set of calibration tables. It is not always practicable to locate ullage covers over the center of area of a tank so that effects of list and trim may be minimized. There is always the fire hazard associated with opening ullage covers and permitting explosive vapors to emanate therefrom. Owners require that capacities be correct to within 0.5 per cent, and with variable hydrostatic heads, it is difficult to find direct reading pressure gauge devices, manometers, etc. that can consistently meet this condition. There are satisfactory commercial gauging devices that eliminate the fire hazard. They employ a float attached to a steel tape that reels in an enclosed housing located on deck, and ullages may be read through a window in the housing; the ullages so obtained are referred to the calibration tables. It requires no great stretch of imagination to conceive of an electronic ullage recorder; possibly a type could be developed where the cost would not prohibit its commercial application.

The calibration tables are computed using final mold loft offsets, the net barrels per inch curve obtained therefrom having all deductions made for steel structure, piping, ladders, etc. These deductions amount to slightly less than one per cent of the gross volume. The preparation of the tables is a laborious and exacting task; the calibration are usually given in 42 gal. barrels for increments of one inch for the total depth of the tank. Some owners require calibrations at one quarter inch increments, little realizing that the effects of list and trim discount such accuracy, and thereby make the preparation of the tables even more of a mathematical exercise.

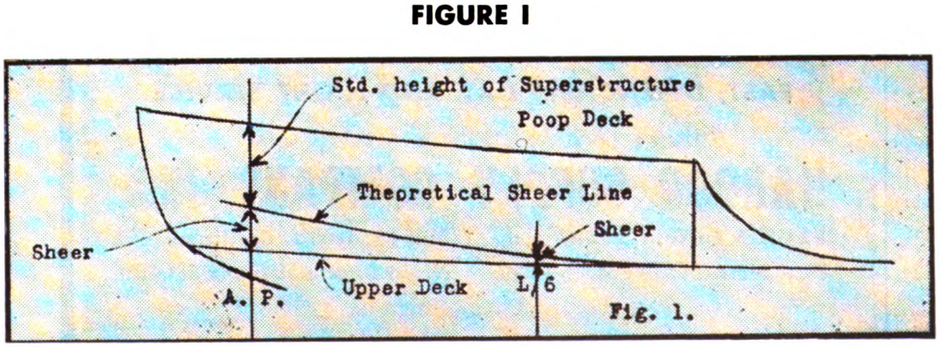
Hull Construction

In general the tanker is characterized by the "three island" type of construction (Poop, Bridge and Forecastle) and machinery located aft. The forecastle and the poop enclosure of machinery casings are compulsory requirements for tankers by the Load Line Act. The relative compactness of modern machinery admits of a shorter machinery space, and the cubic thus gained can be utilized for cargo tanks. The effect on the center of gravity of the cargo is to move it further aft, and as a result the displacement may be distributed to a better advantage. It must be remembered, however, that it is essential to obtain the 32 per cent reduction in tonnage admeasurement for the machinery space; therefore its volume must not be reduced below rule requirements in order to effect this end.

The merchant type of cruiser stern, fitted with some form of stream-lined rudder is accepted practice. The design of the bow is open to two schools of thought: one, favoring the normal form and the

(Continued on Page 60)

FIGURE 1



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Tanker Design

(Continued from Page 59)

other the bulbous bow. Although the majority of tankers operate at speed-length ratios for which Taylor claims little or no benefit for the bulb, model tests show some decrease in horsepower as compared with normal forms for both the load and ballast cases.

The bulbous bow permits a fining of the entrance at the water line and an easing of the forward shoulder; the displacement there removed being placed in the bulb where it creates less resistance. It is not difficult to so shape the bulb as to obviate pounding. The structural members of the bow are more accessible for repair in the event of a grounding damage. The hull in way of the anchor handling should be canted forward as in naval practice or breasted out to provide proper clearance for the anchors as they pass the bulb. Tankship owners having experience with both types of bows have reported that the bulbous bow ship is more sea-kindly, is retarded less in heavy weather and manifests less of a tendency to pitch and take head or quartering seas over the bow.

To Be Continued in May Issue of The LOG

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Stability of Cargo Ships

(Continued from Page 54)

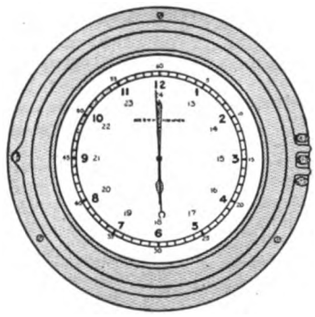
beams, and the result is a greater GM than the assumed condition shows. Roughly, the GM will be augmented by $\frac{1/2\ d\ w}{W}$ for each hold or 'tween deck not stowed to the beams, where d is the average distance of the top of the cargo below the beams, w is the total weight of cargo in the space, and w is the displacement of the ship. An accurate correction for the actual distribution of the cargo, as contrasted to the assumed homogeneity, can be made by summarizing all the items of cargo with their vertical moments and arriving at the true position of its center of gravity. However, if the cargo on each deck level totals to about the same as the total for that deck on the assumed condition, regardless of the longitudinal distribution, or if an overloaded upper 'tween deck is balanced by an overloaded hold, the error is small. Generally it is desirable to place especially heavy pieces of cargo directly on the deck or tank top. This tends to drop the true center of gravity below the homogeneous center and the discrepancy is on the side of stability. If the GM of the assumed loading condition is appreciably greater than the GM required for this condition, greater liberties can be taken with the cargo weight in the upper 'tween decks and on deck.

If the double bottom tanks do not contain the same weight of liquids, or if there are more or fewer slack tanks than in the assumed loading condition, the GM should be corrected accordingly. Rule of thumb methods can be developed by a study of the stability booklet. Removing 100 tons of salt water ballast from the double bottoms of a fully loaded Victory ship, decreases the GM by 3". Slackening No. 3 centerline double bottom tank decreases the GM by 1½".

Inclining Experiment at Dockside

If the vessel is in port docked in fairly smooth water and protected from the wind, an elementary inclining experiment will quickly determine its GM at the moment. The movement of some appreciable known weight in a transverse direction and the measurement of the resulting list give the moment-list relation which defines the GM. The weight may be fuel or water pumped from one side of the double bottom or deep tank to the other side, or a heavy piece of cargo moved across the ship with a boom. The list can be measured by the transverse movement of a bob suspended from a long string. Then the $GM = \frac{w\ d\ l}{W\ t}$, where w is the weight moved and W is the displacement of the ship, both in tons, d is the distance the weight is moved, l is the length of the pendulum, and t is the transverse movement of the bob, all in feet.

A method of checking the GM by measuring the period of roll is derived from the formula for unresisted rolling in still water, $T = 1.108\ k/\sqrt{GM}$, where T is the complete time in seconds of one roll from one side to the other and back to the same side, and k is the radius of gyration of the ship about the rolling axis. Actually the value of k is a function of the loading and is difficult to ascertain exactly, but for a normal cargo vessel, it is approximately a constant fraction of the



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beam B throughout a large range of loading. Then the above formula becomes $GM = (C\ B/\ T)^2$, where C is a constant. For the normal cargo ship, C has a value of about .44 and varies only slightly for medium and full load conditions. During the trials of the ss BLUEFIELD VICTORY, the value of C was determined for three conditions of loading:

	Displacement	*GM*	*T*	*C*
Light Load	5268	7.32	11.62	.507
Medium Load	10077	7.95	9.99	.454
Full Load	14837	7.13	9.39	.404

Since salt water ballast in the holds was used for loading, the value of k, and hence C, may be somewhat low.

The above formula should give fair accuracy for a GM greater than 6″ when the vessel is rolling in still, protected water, say when slight rolls are caused by shifting cargo in port. Unfortunately these rolls are usually of such small amplitude that they are difficult to time accurately. At sea, since under the influence of waves the ship does not always roll in its true period, the formula will not be accurate if the rolling is erratic or if it gives a GM less than 6″. For any particular ship, the formula may conveniently be put in a tabular form. For instance, the following table would apply to a C-3 cargo ship with a beam of 69.5 ft., assuming a C of .44:

T	*GM*
16 sec.	3.7 ft.
18	2.9
20	2.3
22	1.9
24	1.6
26	1.4
28	1.2
30	1.0

The various GM meters on the market may be divided into two types:

1. GM automatically calculated from the period of roll.
2. GM semi-mechanically calculated from the loading of the ship.

Meter Calculations

Of the first type, the simplest meter merely averages several successive periods of roll, calculates the approximate GM by the formula discussed above, and indicates it on a scale. Another meter has provision for adjustment of its constant to approximate the true value of k, the radius of gyration, corresponding to the actual loading of the ship. The chief drawback of these period-measuring meters is their unreliability in port. Often during cargo loading, when the GM is of prime importance, there is no rolling or it is too insignificant to be measured accurately. A small roll, however, can be timed more accurately by such an instrument than by observation. At sea the results from a period-measuring meter must be regarded with skepticism, under conditions when the ship may not be rolling in its true period.

The second type of GM meter calculates mechanically the position of the center of gravity of the loaded ship from settings made by hand, and indicates the GM corresponding to the actual loading. On the Stabilogauge, the total weight of cargo on each deck level is set on a graduated knob. Other knobs are set to correspond to the total weights in the double bottom and the deep tanks, and to correct for free surface in tanks and broken stowage. The resulting GM is indicated on a dial, and the required GM is indicated by a red flag. On the Ralston stability meter, the center of gravity is calculated by balancing a metal profile of the ship, upon which weights have been placed to represent the weights of cargo and liquids in the various spaces. Provision is also made for various corrections. All meters of this type perform mechanically and approximately a calculation similar to those in the stability booklet for assumed conditions of loading. Although the results are only as accurate as the manipulator's knowledge of the loading of the ship, this type of meter has these distinct advantages:

1. It can be used equally well in port or at sea and is independent of any motion of the ship itself.
2. It gives an immediate visual indication of the effect of adding or deducting weights at any point on the ship.
3. It is accurate if set accurately.

This discussion has attempted to cover the general problem of cargo ship stability and suggest various aids to the operator. Individual aspects of stability may be discussed more fully in later articles.

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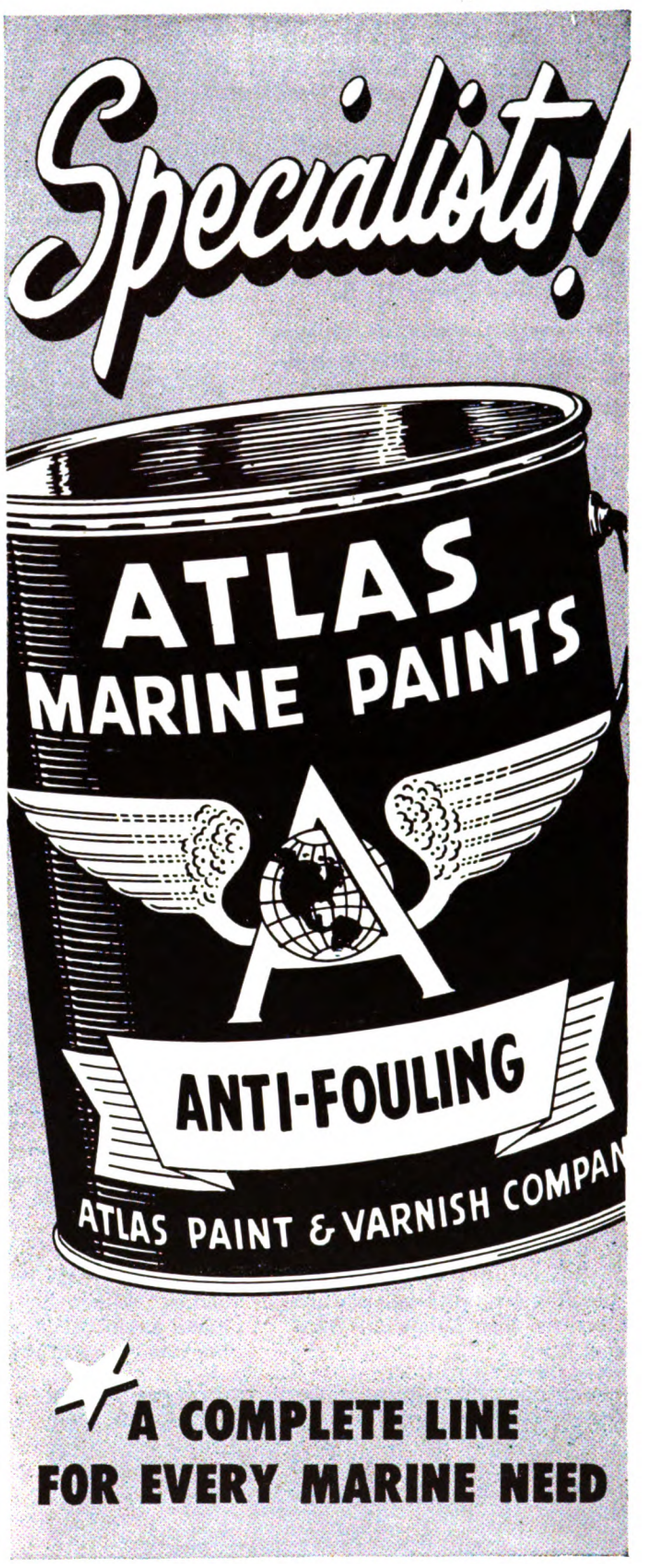

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EQUIPMENTALK

Marine Manufacturers Tell Their Stories . . .

The "Komul Kids" and Their "Komul Kite" Fly Over U. S.

Selby, Battersby & Company of Philadelphia, well known in the marine field for over thirty-five years as manufacturers and applicators of all types of deck coverings, have a flying department, known as the marine material sales department. August Schlueter is manager with J. H. Hoeveler, Jr., and W. F. Reilly as assistants.

One of the materials this department handles is Komul; the first coal tar pitch emulsion ever formulated as a cold applied anti-corrosive coating. It has been on the market for some twelve years.

These three men are known in the marine field as the "Komul Kids" and their ship is called the "Komul Kite." Jim Hoeveler is pilot and Bill Reilly co-pilot and navigator. Gus Schlueter is back seat pilot. They started with an Ercoupe but now operate the five place Beachcraft shown in picture.

The "Komul Kids" have flown the east coast, gulf coast, and west coast from Boston to Seattle.

During their flights the "Komul Kids" worked with the company's distributors: Marine Contractors Co., Boston; Ray B. Cralle, Tampa; Marine Specialty Co., Mobile; Marine Welding, Scaling & Sales Co., New Orleans; J. M. Costello Marine Supply Co., Wilmington, California; Cordes Brothers, San Francisco; Marine & Industrial Supply Co., Portland; Tourtellotte & Bradley, Seattle.

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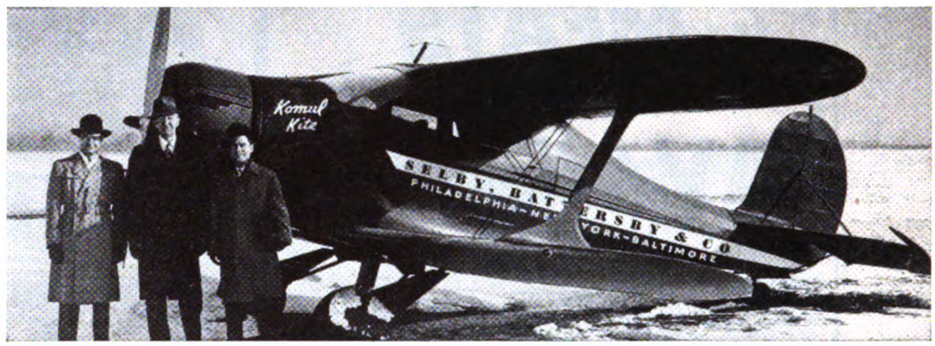
Anaconda Wire & Cable Company announces appointment of Tri-State Supply Company, Los Angeles, San Francisco and Seattle, as western distributors for Anaconda magnet wire.



THE "KOMUL KIDS" AND THEIR "KOMUL KITE"—Here is shown AUGUST SCHLUETER, Manager of the Marine Department of Selby, Battersby & Company, Philadelphia, greeting his flying assistants, J. H. HOEVELER, Jr., and W. F. REILLY at Camden, N. J. on the return of the plane from a trip covering all seaboards of the United States, during which these two worked with the firm's distributors at principal ports and supervised the application of Komul at all Maritime Commission reserve fleet sites.

M. J. Gigy & Associates New Factory Representatives

M. J. Gigy and V. R. Keays, formerly with Carswell Marine Associates and Cargocaire Engineering Corporation at San Francisco, announce the formation of M. J. Gigy & Associates, 110 Market Street, to function as direct factory representatives for marine manufacturers.

The new firm starts out as representative for Aldrich Pump Company, Lake Shore Engineering Company, M. L. Bayard & Company, Hydraulic Supply Manufacturing Company, Piezo Manufacturing Company, The Tregoning Boat Company and Seaboard Machinery Company. According to the company they are providing a complete line of marine equipment, including pumps, cargo and topping winches, both D. C. and the revolutionary new A. C. "Magi Winch" and "Siporter", sliding watertight doors and controls, metal hatchboards, steel booms, lifeboats, buoyancy apparatus, universal joints, couplings, deck boxes, anticipating governors, rolling hatch beams and several specialty items.

The firm is stocking for immediate delivery from San Francisco a considerable quantity of component and repair parts and can render complete engineering service, with emergency deliveries of repair parts on a 24-hour basis.

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FORM NEW COMPANY . . . M. J. GIGY and V. R. KEAYS are factory representatives under the name of M. J. Gigy & Associates, San Francisco.

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General Electric Adds to Electronics Staff at Seattle

General Electric Company has announced the appointment of L. R. Sheeley to the staff in charge of the tube and specialty division of the electronics department at Seattle. A graduate electrical engineer from the University of Washington, Sheeley was with the Hot Point Company prior to the war, served as radar officer with the Navy during the war, and was with Seattle Radio Company for two years prior to assuming his new position with General Electric on January 1.

In his new position Sheeley works in close cooperation with John Hogg in charge of the transmitter division of the electronic department. They serve as service engineers in the marine, aviation, broadcasting, television, and radio communications fields in Oregon and Washington.

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Dampney Appoints Paxton Co. Virginia Distributor

The Dampney Company of America, Hyde Park, Boston 36, Massachusetts, announces the appointment of Paxton Company, Norfolk, as distributor for Virginia. Paxton Company will market Dampney products for metal maintenance to the marine and railroad as well as to the general industrial field.

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NEW QUARTERS for Sherritt & Headman, Inc., 3626 E. Marginal Way, Seattle, Washington.

Seattle Marine Cleaning Firm Moves to New Building

Sherritt and Headman, Inc., Seattle marine cleaning firm, observed their second anniversary as a corporation by moving to new building at 3626 E. Marginal Way recently. Specially designed for their use space permits consolidation of office, warehouse and gear lockers under one roof, and provides space for their enlarged operations and constantly increasing inventory of gear and equipment.

Commenting on company progress president P. J. Sherritt states: "In two years we have completed over a quarter million dollars worth of cleaning at a substantial saving to the operators. In March 1947 a mobile high pressure system was purchased to further cut costs and time and this has proved very successful. Hot or cold water, with or without chemicals, is used with pressure as high as 800 pounds. This method of cleaning water and oil tanks is far superior to the older methods in previous use."

Sherritt became active in marine work in 1943 and manages the office and business side of his firm. R. R. Headman is in charge of the actual operations and personally supervises the field work. His experience dates back to 1930.

Duke's Packing Open San Francisco Branch

Under the management of L. T. "Bunk" Mersereau, well-known in the California marine packing and gasket trade, Duke's Packing Company, Wilmington, California, has opened a branch at 400 Drumm Street, San Francisco, to operate a gasket business and carry a complete line of mechanical packings for shipboard, industrial and refinery use.

Service will be stressed, as usual, by Duke's. The telephone number is YUkon 65474 and night calls can be made to Belvedere 314. All types of standard and special gaskets will be carried and special jobs are invited.

Mr. Mersereau brings to Duke's Packing Company a background of some 20 years on the California waterfront as a packing salesman for the United States Rubber Company. With him at the San Francisco office is Nick Zorka, transferred from the home office at Wilmington to be shop foreman and handle the shipping.

R. H. "Ronnie" Mercereau (no relation), managing partner in Duke's Packing Co., announces, too, the establishment of a ship galley department, handling top plates for all ranges and specializing in repair and re-bricking. In charge of this activity is L. W. O'Bryan, manager of the southern district and an experienced stove man, who became a partner of the firm last January 1. Mr. O'Bryan will divide his time between the northern and southern California headquarters.

Wm. Markey Succeeds Father As Head of Markey Machinery

William Markey, who has been associated with his father in management of Markey Machinery Company, Seattle, since his graduation from University of Washington school of engineering two decades ago, has succeeded to presidency of the company following the death of his father, Charles H. Markey.

The elder Markey, age 70, died of a heart ailment. Arriving in Seattle from Wisconsin in 1902 he and two associates built and operated a trading schooner, running along the Alaska Coast as far north as Point Barrow for four years. He founded the machinery company which bears his name in 1906 and was active in the management until the week of his death. Today Markey marine auxiliary machinery, including deck winches, anchor windlasses, steering engines, and other deck and marine gear, are on military and commercial vessels.

CARL VOM CLEFF, Sales Manager, Northwest Marine Iron Works, Portland, Oregon.

Northwest Marine Iron Works Names Vom Cleff Sales Manager

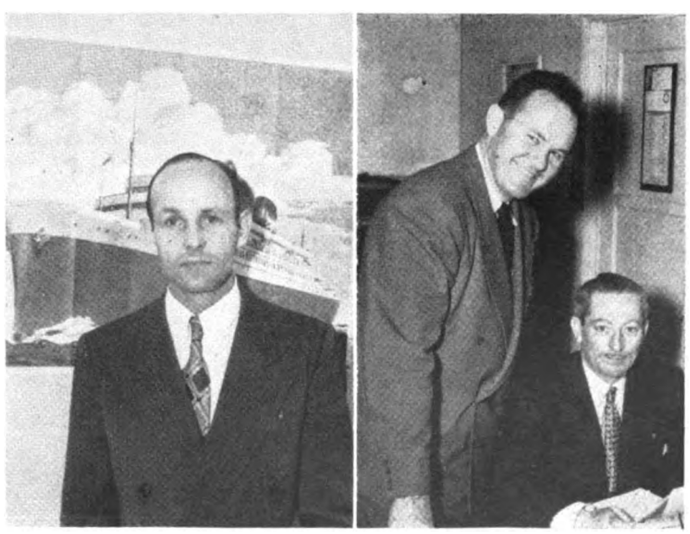
Joseph Grebe, president, Northwest Marine Iron Works, Portland, Oregon, has announced the appointment of Carl Vom Cleff as sales manager, marine and industrial divisions.

In 1918, Vom Cleff was with the boiler erection department of Willamette Iron and Steel Corporation at Portland. From 1919 to 1922 he sailed in Pacific Mail line ships out of San Francisco. Later he became instructor of loft work at Benson Polytechnic School at Portland. For seven years, until late in 1947, he was in the engineering and estimating sections of Kaiser enterprises at Denver and Portland.

New "Calship" Corporation Organized by Marine Men

Another "Calship" has come into being, the California Ship Repair Corporation, established at the old Graham yard at the foot of Washington Street, Oakland, by two well-known San Francisco marine men, J. F. Smith and H. T. (Jim) Hill, to do general ship repairs and conversion work. Their complete facilities include docks and a machine shop.

Mr. Smith was formerly Pacific Coast vice president of Heat Transfer Company and founder of the Maritime Engineering yard in San Francisco. Mr. Hill, who holds a chief's ticket, was with the War Shipping Administration and later a port engineer for the Interocean Steamship Company in San Francisco during the war.



SAN FRANCISCO BRANCH of Duke's Packing Company, Wilmington, California, headed by L. T. MERSEREAU, left. L. W. O'BRYAN, center, Manager of the new ship galley department; and Managing Partner of the firm is R. H. MERCEREAU, right.

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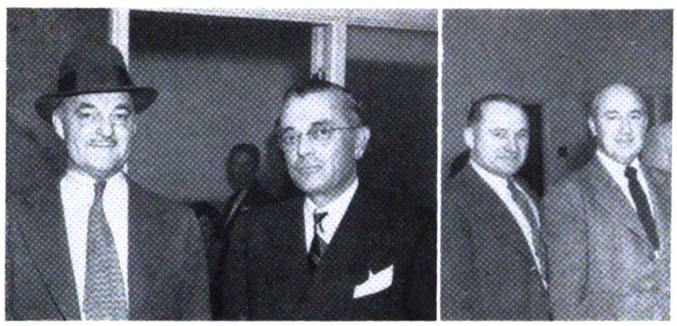


A housewarming party was held by Martin & Turner recently when they opened their big new marine supply store on Avalon Boulevard in Wilmington. Earlier, fire forced them out of their former location in the same city. Photo shows, left to right: JAMES MARTIN, one of the partners; W. RAY CULP, Pittsburgh Plate Glass Company; RUSS CYRUS, port engineer, Union Oil Company and RUSS TURNER, partner.

NEW "MAR-CO" PLANT OPERATORS . . . R. F. FERGUSON, President; JAMES MURPHY, Secretary-Treasurer; and WALTER H. KIRKLIN, who are operating the new company, Maritime Engineering & Ship Repair Company, San Francisco.

Experienced Marine Engineers Join Forces In New Firm

Three experienced waterfront engineers and machinists—R. F. Ferguson, Walter H. Kirklin and James Murphy—are operating the Maritime Engineering & Ship Repair Company, at Bay and Taylor Streets, San Francisco, specializing in ship repairs and survey work.

Mr. Ferguson, president of the company, formerly was marine superintendent at San Francisco for Norton Lilly & Company, was principal machinery inspector for the United States Maritime Commission at the California Shipbuilding yard at Terminal Island during the war and has been going to sea since 1913, holding a chief's ticket since 1916.

Mr. Murphy, secretary-treasurer, formerly was with the Hurley shipyard at Oakland during the war.

Mr. Kirklin recently was branch manager at San Francisco for James Griffiths and Sons, Inc., and formerly was port engineer there for this firm.

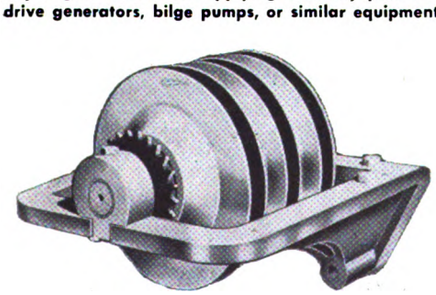
"Mar-co" is holder of War Shipping Administration repair contracts, as well as United States Army and Navy contracts.

Utility Power Take Off Offered by Albina

L. R. Hussa, president, Albina Engine and Machine Works, Portland, Oregon, has announced the company is producing a power utility take off adaptable to any engine for use in supplying auxiliary power to drive generators, bilge pumps, windlasses, blowers, and similar equipment on towboats, fishing vessels, other commercial craft, and on pleasure boats.

Weighing but 25 pounds, the unit consists of sheaves and thrust collars working on a non-rotating shaft with the shaft fastened to a frame rigidly attached to main engine by stud bolts. Two V-belts and take off sheaves operate independently. Control is by either lever or chain. Operation is simple. When pressure is released from levers, take off sheaves are automatically disengaged by compression springs. Originally conceived and adapted for use on the Hussa owned pleasure cruiser, the unit has been successfully used for ten years. Tested to 17.5 hp at 3,240 revolutions, the unit will continuously deliver 5 hp on each pulley at 2,030 revolutions.

ALBINA POWER UTILITY TAKE OFF . . . adaptable to any engine for use in supplying auxiliary power to drive generators, bilge pumps, or similar equipment.



Seattle Marine Service Firm In New Location

Victor A. Hillman, president, Marine and Industrial Supply, Inc., Seattle, announces removal of company offices and warehouse to new and larger quarters at Pier 50. A space on the pier formerly in use by Alaska Steamship Company for personnel office and baggage room is being utilized.

In addition to acting as manufacturers' agents for leading lines of mechanical packings, gaskets, gauges, paints, descalers and other chemical cleaners, the firm also has a service division handling chemical and mechanical cleaning work, painting, and similar engineering services.

Barney Trout and Associates Announce Coos Bay Operation

Barney Trout, president, Capitol Boiler and Machine Works, Inc., has announced the purchase of Standard Boiler Works and Bay Welding Works at Coos Bay, Oregon, and the establishment of plant for ship repair, machine shop and boiler work at the fast growing lumber port. Capitol Boiler and Machine Works, Inc. is the new name given to the firm organized by Trout and his associates, formerly known as the Capitol Ship Repair, Olympia, Washington. Operation of the Olympia plant continues with James Craig in charge. Ole Lillahee is in charge of the new Coos Bay facility.

So. California Branch For Frank Groves Company

Frank Groves Company, marine sales and service representatives, has opened a branch at 111 West C Street, Wilmington, California, and moved its head office and warehouse to 144 Spear Street, San Francisco, where it has 40,000 square feet of floor space.

Frank Groves, owner of the company, has charge of the southern branch, which handles a number of marine lines, including Zallea expansion joints, Farris relief valves, Johns-Manville Goetze gaskets, Botfield refractories, New Jersey asbestos and Nedman Missouri fire brick.

First office opened by Mr. Groves was in Philadelphia in 1916. He established in San Francisco in 1933, Portland 1942 and Seattle 1943.

FRANK GROVES, Owner of the Frank Groves Company, and the company's new branch office at Wilmington, California.

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LYKES AFRICA LINE—From U. S. Gulf ports to South and East Africa.

LYKES ORIENT LINE—From U. S. Gulf ports to The Philippines, Japan, China, Straits Settlements, Netherlands East Indies and other Far Eastern areas.

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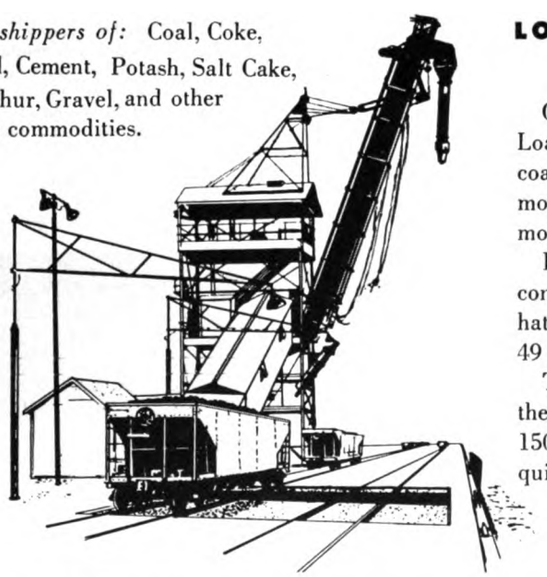

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One of our modern facilities for shippers is the Bulk Loader Conveyor which will load and trim 250 tons of coal per hour. The conveyor handles any other bulk commodity not exceeding 150 pounds per cubic foot, or not more than 14 inches in size.

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The hopper bins accommodate two carloads at a time; the wharf handles 50 cars and approaches provide for 150 additional cars. An electric vibrator quickly shakes cars clean when dumping.

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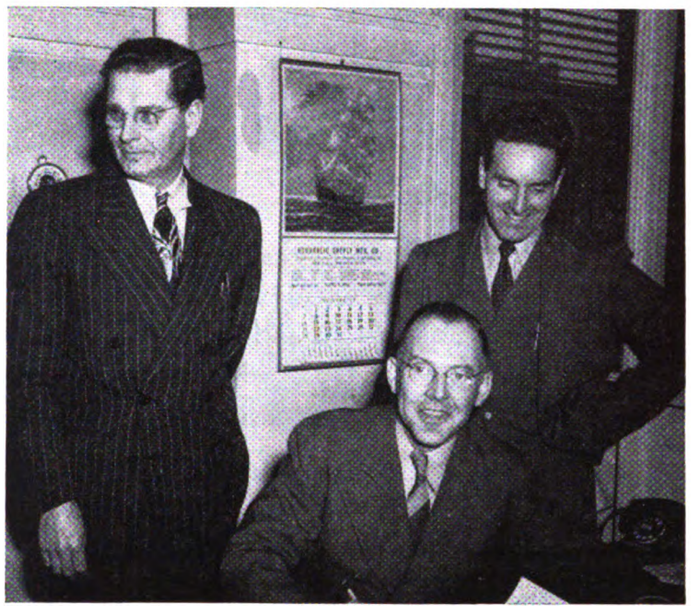
PACIFIC NORTHWEST REPRESENTATIVES for the Robert G. Allen Pacific Company. . . . Seattle staff of John H. Marvin Co., Allenite representatives, left to right; seated, JOHN H. MARVIN; standing, E. C. GILES, Marine Engineer; ROBERT W. LANDON, Industrial Engineer; GEORGE E. H. SMITH, Partner.

Extreme right, FRED A. NITCHEY, JR., Manager Portland Branch of John H. Marvin Company.



INCLUDED among Consolidated Services, Inc., Seattle, service engineers are GEORGE W. GRAETZ, left; C. J. PAVEY, right, and company president A. W. PATERSON, seated.

Hagan Control Handled By Consolidated Services, Seattle

Hagan control systems in marine installations is now being handled by Consolidated Services, Inc., Seattle, according to an announcement by D. J. Erikson, vice president in charge of sales of the Hagan Corporation.

Consolidated Services, Mr. Erikson said, is prepared to provide Hagan repair parts on all marine installations of Hagan controls. This is in addition to the Seattle firm's other engineering service work in the shipping industry.

The Northwest Filter Company, Seattle, is Hagan's exclusive sales agent in the state of Washington.

According to the company the move authorizing Consolidated Services to handle marine service work is in line with Hagan's efforts to increase the availability of its service to ship operators.

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Dake Receives New Appointment with Cargocaire

Lawrence Dake, vice president in charge of sales of the Cargocaire Engineering Corporation, has been appointed to direct all of the company's west coast operations, with headquarters in San Francisco. Announcement of the appointment was made by O. D. Colvin, president of the company, in line with the expanding activities of Cargocaire.

At the same time Mr. Colvin announced that Carl F. Andrus, assistant vice president, has been named head of the sales department on this coast, and F. J. Swaney has been appointed vice president and will head Cargocaire's engineering, research and production. Mr. Swaney will have his offices in the company's plant at Amesbury, Massachusetts.

LAWRENCE DAKE . . . Vice President of Cargocaire Engineering Corporation in charge of all Pacific Coast operations.

The company's headquarters are at 15 Park Row, New York. Pacific Coast headquarters are at 417 Market Street, San Francisco.

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Fairbanks-Morse Announce Factory Management Changes

C. H. Morse, III, vice president in charge of manufacturing of Fairbanks, Morse & Co., has announced the following changes in the company's factory management organization.

W. H. Holbert, who for the past 20 years has been manager of the company's Stuttgart, Arkansas works, has been appointed manager of the Three Rivers, Michigan, plant succeeding Karl E. Barrett who has resigned because of ill health.

J. R. Walsh, who has for several years been assistant manager of the Fairbanks-Morse Westco works in St. Louis, has been transferred to the Stuttgart, Arkansas, works and has been appointed works manager of the company's plant in that city.

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George B. Plant, Sopac Ship Maintenance Company, San Francisco, announces appointment of James H. Camp as vice president and general manager. Mr. Camp has long been active in the marine trade and ship cleaning circles in northern California. The Sopac Company is now operating on the Gulf of Mexico, in Texas and Alabama, and contemplates establishment of offices there.

GEORGE MARTENSEN, former seagoing engineer officer, has returned to the employ of E. F. Drew & Company, Inc. as marine sales engineer at their San Francisco office, working with J. F. Churchill, Pacific Coast manager for Drew and Joseph Lewis in marine sales, all handling the firm's Ameroid boiler water treatment.

Mr. Martensen sailed with the United Fruit, Isthmian and American-Hawaiian lines and was with Drew previously in the San Francisco office.

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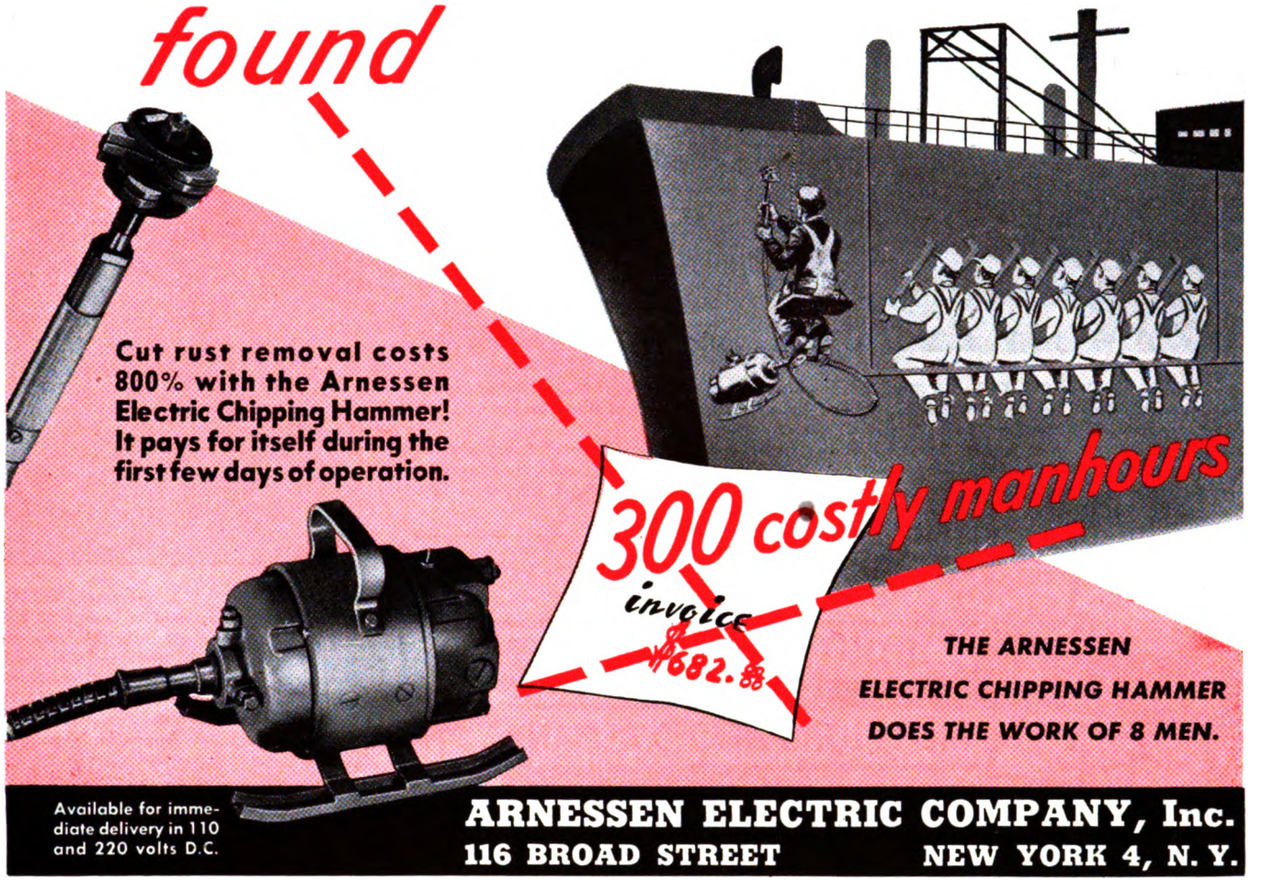

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Port of Seattle
MODERN TERMINAL FACILITIES

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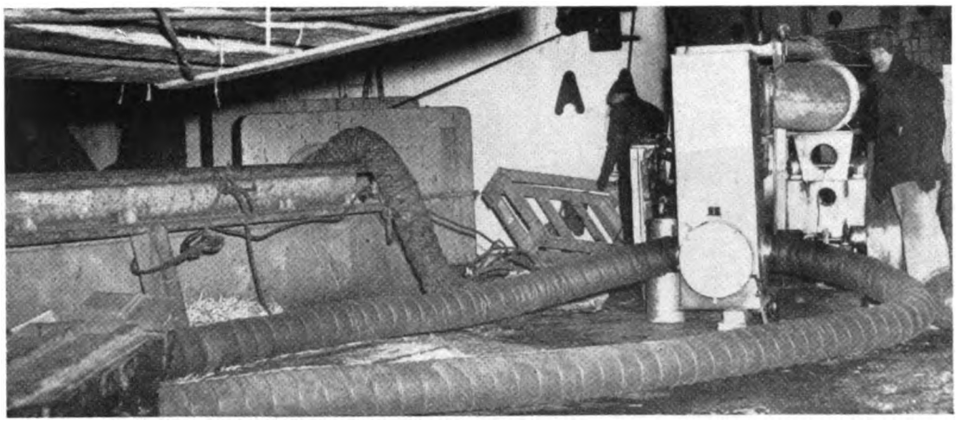

THAG SAVES A SHIPLOAD OF POTATOES . . .Destined for Italy in the Army's civilian relief program the potatoes are protected from freezing while being loaded by continuous hot air being pumped into the holds by Thag—a machine developed by Todd Shipyards Corporation.

The spuds arrived at the pier in pre-heated trains and trucks and were in danger of freezing while being put aboard the ELKO VICTORY, a States Marine Corporation freighter. A steady temperature averaging 37° was maintained in all five holds of the ship while the outside temperature ranged from 0 to 18°.

ALBINA ...UTILITY POWER TAKE-OFF MEETS LONG NEEDED DEMAND

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LEVER OPERATED
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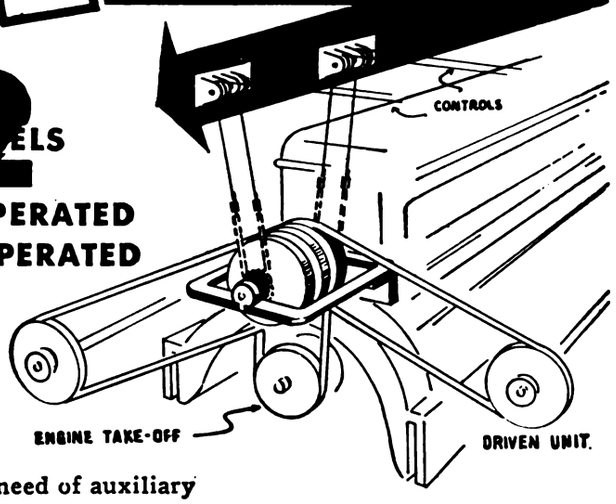

If you are in need of auxiliary power, the ALBINA UTILITY POWER TAKE-OFF will do the job. Tested to 17.5 h.p. at 3,240 rev., unit will continuously deliver 5 h.p. on each pulley at 2,030 rev. Sheaves and thrust collars work on a non-rotating shaft, eliminating wear and freezing up at high speeds. 2 V-Belts and take-off sheaves independently operated. The unit may be controlled remotely from any location.

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ALBINA ENGINE & MACHINE WORKS
PORTLAND, OREGON

GLOBE WIRELESS LTD. promotes NEIL D. BROWN, above, to Vice President in Charge of System Operations, with headquarters in the home office of the company in the R. Stanley Dollar Building, San Francisco. R. STANLEY DOLLAR, President of Globe also announced GENERAL W. P. BOATWRIGHT has been made Senior Vice President. Mr. Brown is the oldest company employee in point of service.

Karl Instrument Moves To Larger Quarters

Outgrowing its old place of business, Karl Instruments manufacturers of the new Rasmussen Electrical Engine Order Telegraph System, has moved to larger offices and shops at 1035 Harrison Street, San Francisco 3, telephone UNderhill 1-8160.

Mr. Rasmussen plans a trip to Washington and New York soon to demonstrate his Engine Telegraph.

Howe Begins 15th Term As President of Ship Chandlers

For the fifteenth consecutive term, C. K. Howe, of Weeks, Howe, Emerson Company, San Francisco, was elected president of the Pacific Coast Ship Chandlers Association at its annual meeting in San Francisco in February.

L. D. Adams, C. J. Hendry Company, was named a director to succeed C. J. Dilke, resigned. Other directors are: Carl Thomas, Oregon Marine Supply Company, Portland; Jack Nuttall, The McCaffrey Company, San Diego; Ray Mitchell, Marine Hardware Company, San Pedro; H. H. Haviside, the Haviside Company, San Francisco, and Ed Cunningham, Pacific Marine Supply Company, Seattle. Secretary is I. C. Freeman.

Open house was held recently by Arthur Pegg, Sr., and his son, Arthur Pegg, Jr., at their brand new building at 508 N. Beacon Street, San Pedro, which houses their International Marine Paint and Sumco Products agencies. The Pegg firm has been handling International Marine Paint on Los Angeles harbor for 25 years.

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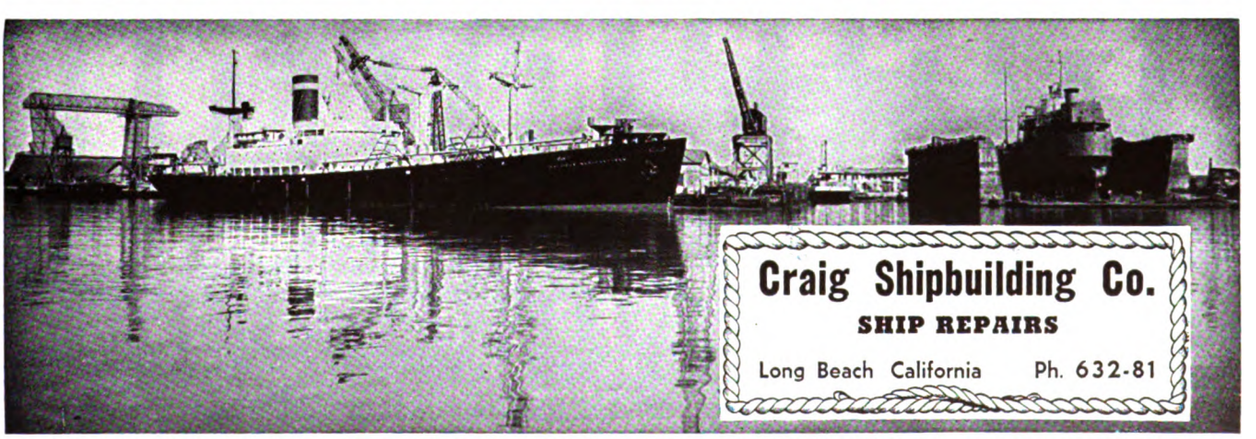
Chicago: 333 No. Michigan Avenue Room 2116, "Dearborn 2257-8"
Tacoma—Shaffer Terminal Broadway 1118



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Presenting the

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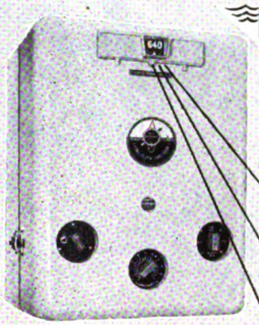
TRIPLE-RANGE

DEEP-WATER

DEPTHOMETER

TRADE MARK



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640 ...to 640 Fathoms

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DIVISION OF National-Simplex-Bludworth, Inc.

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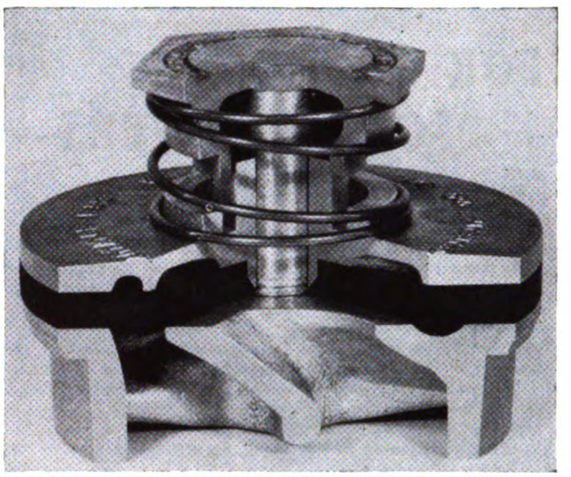

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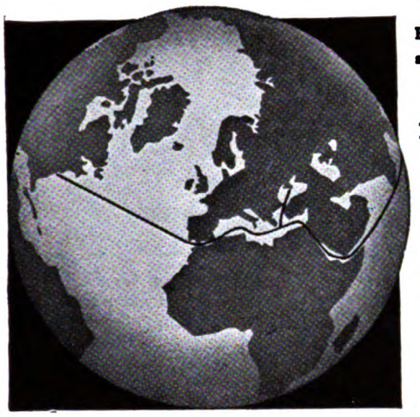

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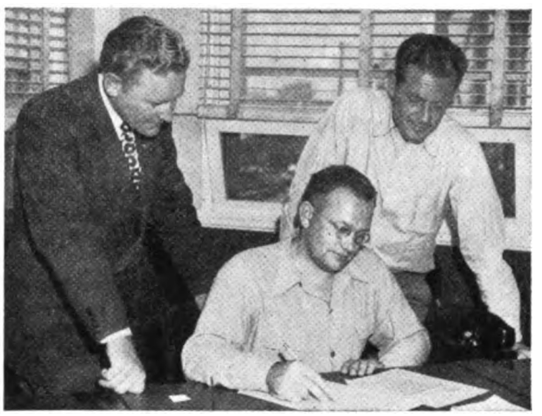

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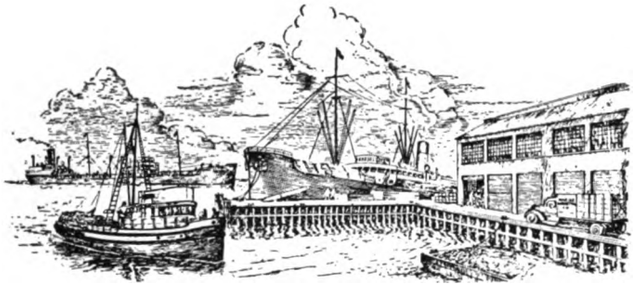

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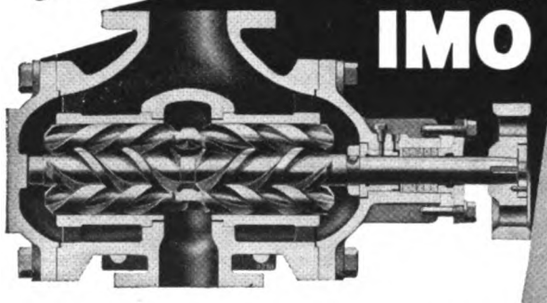

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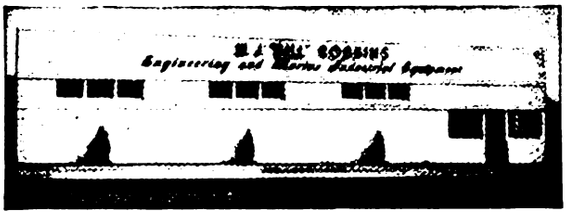

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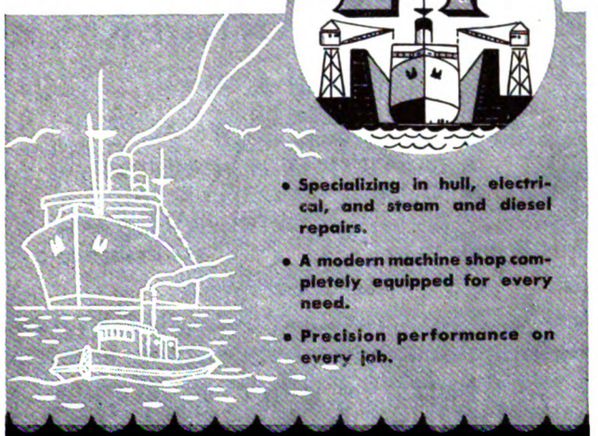

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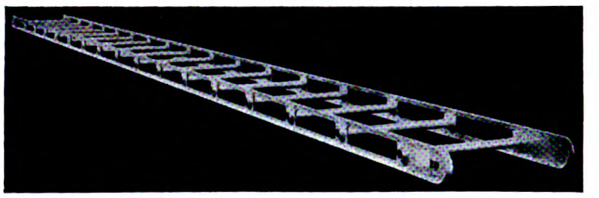

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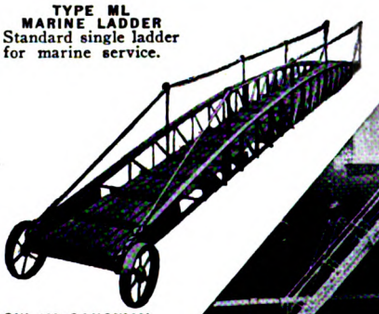

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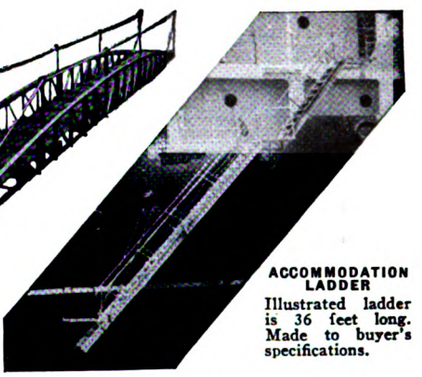

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ADVERTISERS INDEX

Albina Engine & Machine Works....66
Allen Pacific Co., Inc., Robert G....78
Aluminum Ladder Co....75
American Brass Co....8
American Export Lines....71
American Mail Line....69
American President Lines....79
Ames Terminal....74
Anchor Equipment Co....80
Arnessen Electric Co....67
Atlas Paint & Varnish Co....63

Babcock & Wilcox Co....13
Babcock & Wilcox Co., Refractories Division....Inside Back Cover
Baier & Associates, L. C....79
Baker Dock Co....78
Bethlehem Steel Co....21
Bird-Archer Company of Calif....76
Bludworth Marine....70
Bratsberg, Capt. A. J. H....80

California Ship Repair Corp....70
Carrier Corp....17
Catalina Island Steamship Line....76
Cavanaugh Machine Works....72
Central Maritime Contracting Co....75
Chesapeake & Ohio Railway....42, 43
Columbia Machine Works....77
Commercial Ship Repair....77
Cordes Bros....77
Costello Supply Co., J. M....78
Craig Shipbuilding Co....69
Crane Packing Co....58
Curtis Bay Towing Co....24

DeBoom Paint Co....61
De Laval Steam Turbine Co., The....74
Dravis Engineering & Machine Works....75
Drew & Co., Inc., E. F....1
Duke's Packing Co....62

Everett Pacific Shipbuilding & Dry Dock Co....75

Foster Wheeler Corp....23
Fuller & Co., W. P....38

General Engineering & Dry Dock Co....73
Gladding, McBean & Co....78
Gow, Inc., Alexander....78
Griffiths & Sprague Stevedoring Co....71
Guralnick, Morris....78

Hanson, H. C....78
Harbor Supply Co....60
Harris, Manly S....78
Hart & Burns, Inc....51
Haviside Co....72
Hendry Co., C. J....2
Heuck Company, Ed....58
Hickman Engineering Co....73
Hiller, Paul W....78

International Nickel Co....7
Isherwood & Co., Ltd., Sir Joseph W....78

Kearfott Co., Inc....78

Long Beach Marine Repair Co....72
Long Beach, Port of....65
Lubaid Co....11
Luce & Co....63
Lykes Bros., Steamship Co., Inc....65

Marine Electric Co. (Portland)....74
Marine Electric Co. (San Francisco)....76
Marine & Industrial Supply, Inc....79
Marine Marketing Co....73
Marine Service, Inc....77
Maritime Engineering....78
May & Smith Co....76
Moore & Co., C. C....13, Inside Back Cover
Moore McCormack Lines....55
Morrison & Bevilockway....78

Nordberg Manufacturing Co....Front Cover, 3
Northwest Instrument Co., Inc....79
Nystrom, E. W....79

O'Donnell Copper Works, E. M....79
Oxi Corporation....4

Pacific Chemical Co....69
Pacific Marine Refrigeration Co....78
Pacific Marine Supply Co....71
Perry, L. C....79
Pilot Marine Corp....71
Puget Sound Freight Lines....77

Radiomarine Corp. of America....19
Refractory Coatings Co....78
Republic Electric Co....77
Robbins, W. J. "Bill"....74
Roebling's Sons Co., John A....5
Ross Heater & Manufacturing Co., Inc....62
Rothschild International Stevedoring Co....78

Seaboard Machinery Corp....9
Seattle Marine Surveyors....79
Seattle, Port of....67
Selby, Battersby & Co....72
Sharples Corp....6
Shell Oil Company, Inc....47
Sherritt & Headman, Inc....65
Sherwin-Williams Co....14
Ship Equipment & Supply Co....76
Sims Pump Valve Co., Inc....70
Socony-Vacuum Oil Co., Inc....Inside Front Cover
Southworth Co., Herb L....77
Standard Oil Co. of California....15
Sumco Products, Inc....78
Sweetin Co., J. L....79
Swett & Co., George E....69

The Texas Co....Outside Back Cover
Thompson Co., J. Paul....78
Thorpe & Son, Inc., J. T....78
Todd Shipyards Corp. (Combustion Equipment Div'n.)....73
Tubbs Cordage Co....57

United Fruit Co....10

Weeks-Howe-Emerson Co....76
Welin Davit & Boat....12
Western Asbestos Co....70
Western Machinery Corp....51
Western Ship Service Co....55
Wilmington Engineering Service Co....77

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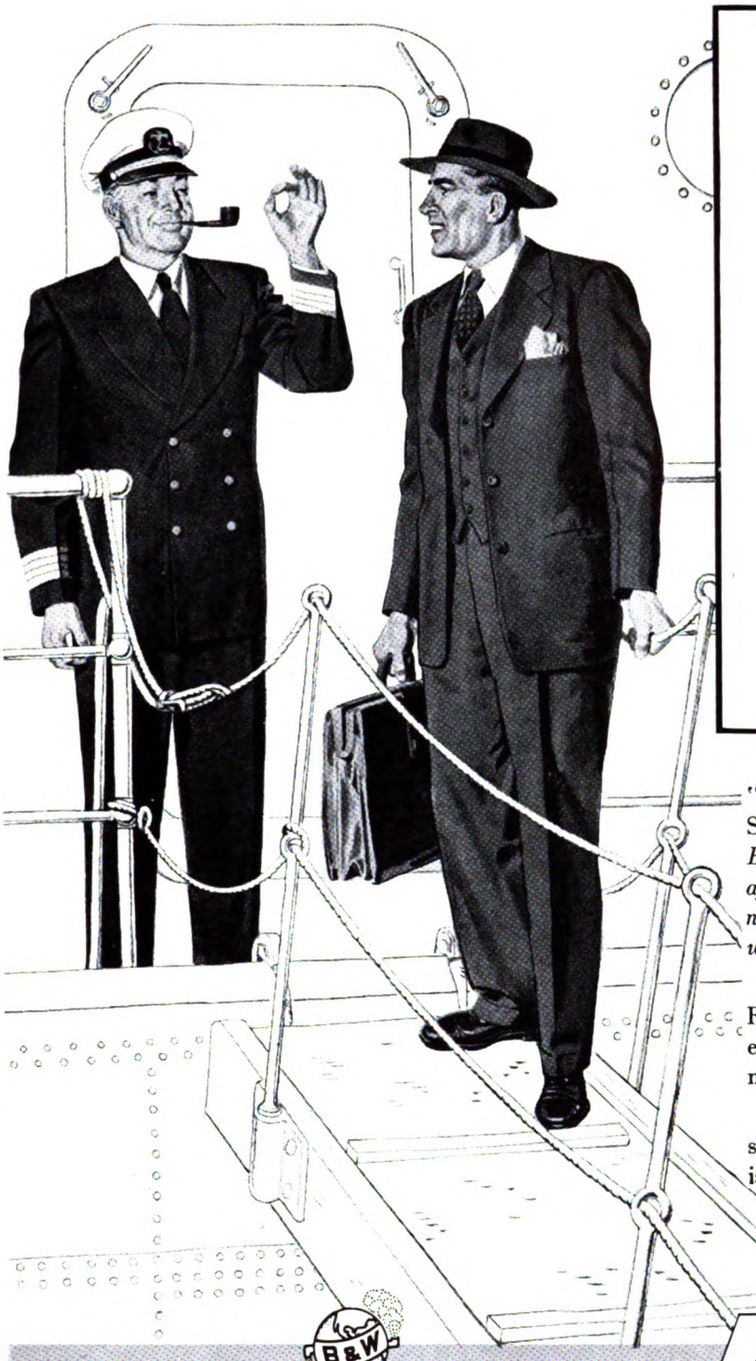

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"The Chief is very well satisfied," said our Service Engineer, coming off a C-1-B. "*Those B&W JUNIOR FIREBRICK are still in service after four years of tough going. Only the floors need renewing — and in furnaces without water-walls, too!*"

This is typical of hundreds of B&W Service Reports which show the way to boiler room economies through less brickwork maintenance and boiler outage.

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REDUCE ENGINE MAINTENANCE AND OPERATING COSTS

Photo courtesy Mississippi Shipping Co., Inc.—Delta Line

Texaco Marine Lubricants assure trouble-free performance... lower upkeep and fuel costs.

ALL marine main power units . . . Diesel, turbo-electric, reciprocating steam . . . give their best performance on Texaco Marine Lubricants. Ask the man with engine room experience.

The quality of Texaco Marine Lubricants . . . uniform wherever you secure them . . . assures the high efficiency that means full power . . . trouble-free operation . . . lower maintenance and repair costs . . . and savings in fuel consumption.

Your vessels can get Texaco Marine Lubricants for every shipboard need at more than 350 ports . . . in the U. S. and around the world. Texaco Marine Engineers will gladly make regular service calls on board ship and help you select lubricants. The Texas Company, *Marine Sales Division,* 929 South Broadway, Los Angeles 15, California.

TEXACO

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TUNE IN...TEXACO STAR THEATRE every Wednesday night featuring Gordon MacRae, Alan Young, Eveiyn Knight: ABC Network

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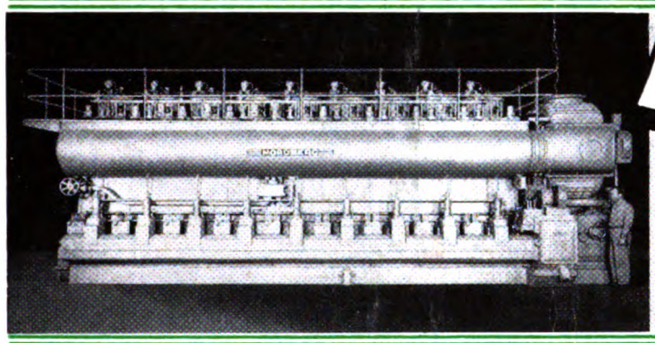
THE LOG OF AMERICA'S MARITIME INDUSTRIES

the LOG

DEPENDABLE POWER

For Ship Propulsion

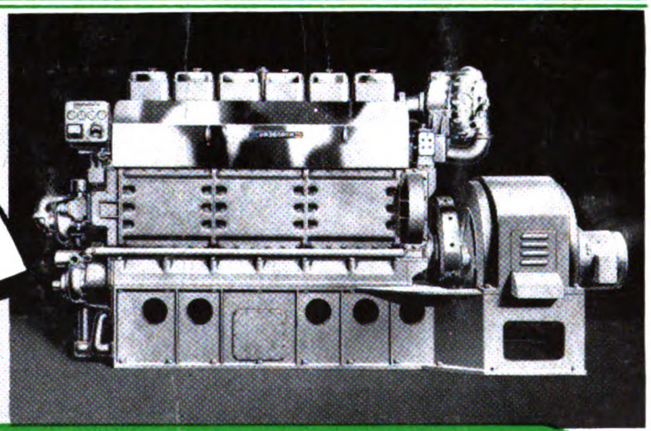
For Auxiliary Service



Built in various types and sizes to meet all marine applications.

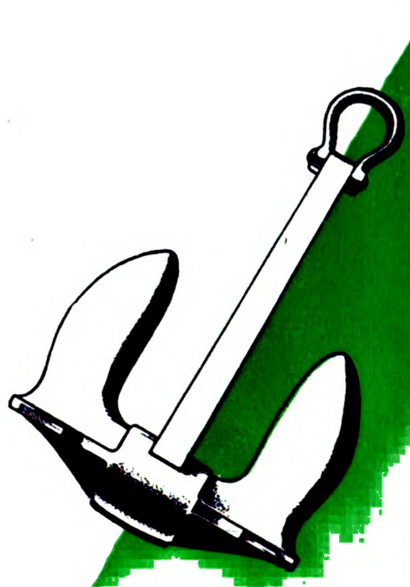
TWO-CYCLE

FOUR-CYCLE



See Page 3

NORDBERG
DIESEL ENGINES



MAY 1948
Volume 43 • Number 5

EDITORIAL INDEX ON PAGE....25
ADVERTISERS' INDEX ON PAGE 72

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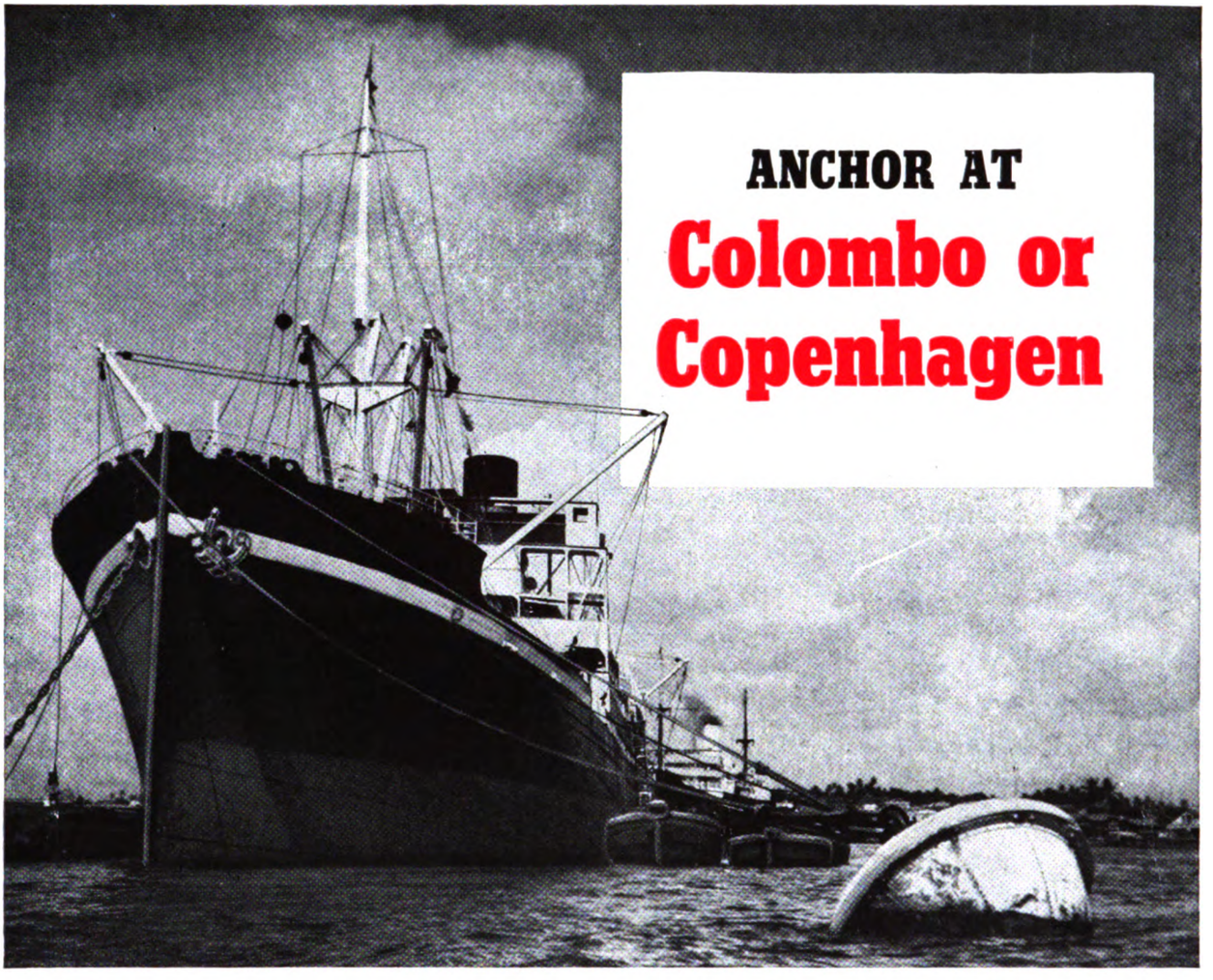

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PUT IN at any major port around the world. You'll find it's a "home port" of famous Gargoyle Marine Service.

You'll find a Gargoyle Marine Representative fully informed of your ship's lubrication needs . . . fully equipped to give prompt, expert service with *correct lubrication*.

Take advantage of this important key to quick turn-arounds. Specify Gargoyle Marine Oils!

SOCONY-VACUUM OIL COMPANY, INC.
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GARGOYLE
Marine Oils

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MARINE OILS AND ENGINEERING SERVICE

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. . . A Unit in United's Full-Scope Facilities

United's San Francisco Repair Shops . . . occupying two city blocks on the waterfront and equipped with the most advanced type of machinery, tools and technical equipment . . . are an important unit in United's over-all operations.

The highly developed facilities of this modern plant . . . together with those of United's shipyard and drydock operations in Alameda and extensive pier operations in San Francisco . . . provide for every phase of service: from the minor repair job to over-all conversion of ocean liners.

United Engineering Company

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DRYDOCKING
SHIP REPAIRS
CONVERSION

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This is no swivel-chair theory

Fuller products must be right. Fuller never jumps the gun for publicity purposes. New 5037 Red LZI Metal Primer is *right*. From a good lab idea to the good product it now is took three years of tough testing. That's why we mean it when we say LZI (composite: lead, zinc, iron!) *saves three ways* compared to any other structural steel inhibitor. LZI gives (1) lower initial cost, (2) lower application cost, (3) longer inhibition with less creeping, or, lower maintenance cost. That's it—and *you* know that's worth looking into. A phone call can make us prove it. Make that call. W. P. Fuller & Co. Branches and Dealers in all Pacific Coast ports, including Alaska.

26,000 hours of exposure tests prove 5037 Red LZI Metal Primer today's outstanding structural steel inhibitor

NOW—74% new or improved qualities!

Boot-topping	**Cabin Finishes**	**Deck Paints**	**Hold Paints**	**Hull Finishes**
Bottom Paints	**Canvas Dressings**	**Funnel Paints**	**Metal Primers**	**Ventilator and**
wood and metal	**Deck Lacquers**	**Engine Room Enamels**	**Topside Finishes**	**Signal Colors**

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ICELAND'S *Largest Motorship* *is* NORDBERG DIESEL *Propelled*

MS TROLLAFOSS is propelled by a six cylinder, 21½" x 29", 1800 horsepower Nordberg Diesel engine.

THE modern Motorship TROLLAFOSS of the Icelandic Steamship Company is another of the many Nordberg Diesel propelled vessels now under European registry. This, the largest of Iceland's vessels, is 338 feet long, of 7425 tons displacement and will operate between Reykjavik and New York. In the long, grueling runs across the North Atlantic, Nordberg Diesels have demonstrated by past performance that they meet every demand — that they are dependable and economical to operate.

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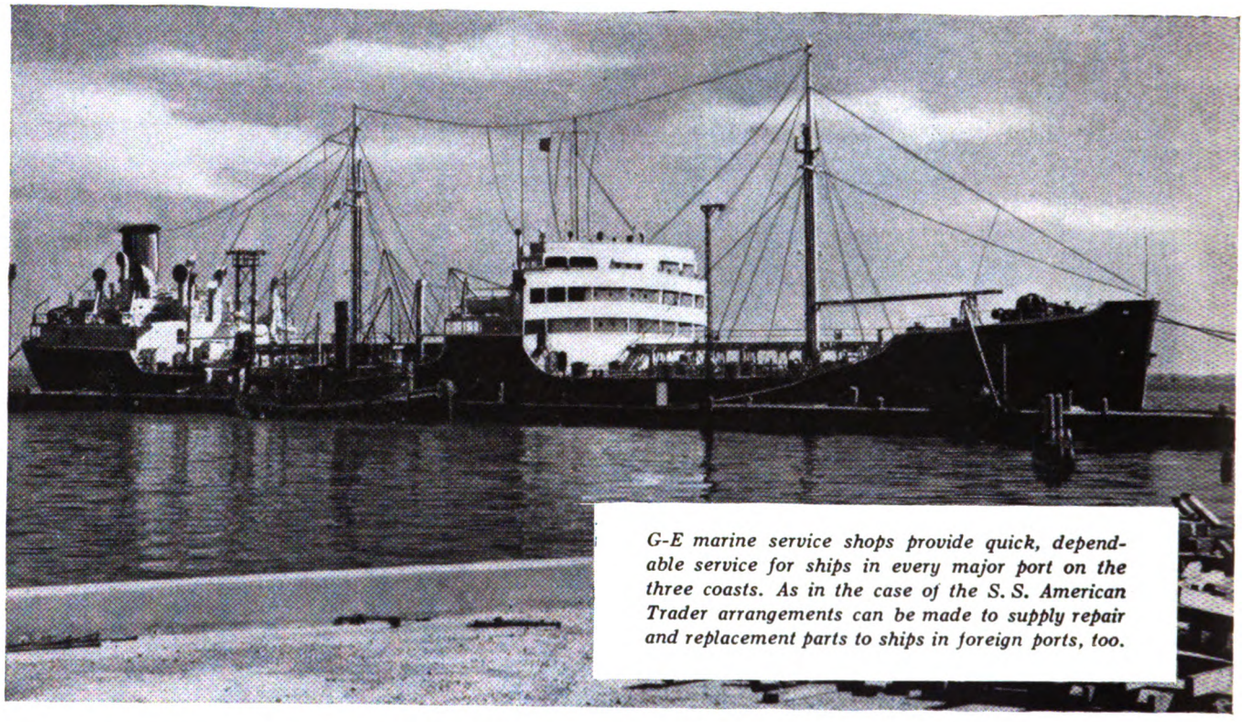
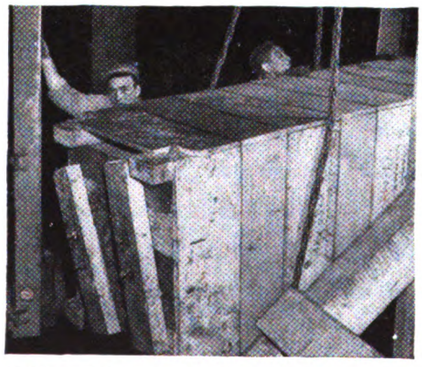
3½ TON ROTOR HOPS TO SAVE OPERATOR



G-E marine service shops provide quick, dependable service for ships in every major port on the three coasts. As in the case of the S. S. American Trader arrangements can be made to supply repair and replacement parts to ships in foreign ports, too.



Million-dollar stocks of marine parts are maintained in G-E warehouses. Here, a replacement rotor for the American Trader is loaded on a truck at the N. Y. service shop.

After careful crating, the ship's rotor is loaded aboard a waiting American Overseas Airline transport plane at LaGuardia Airport.

This American Overseas Airlines plane helped deliver the replacement to the S. S. American Trader in only 48 hours. It was the heaviest piece of freight that has ever flown the Atlantic.

GENERAL ELECTRIC

200-65

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ATLANTIC OVERNIGHT

7 DAYS PORT TIME

G-E Service Shop rushes vital part to England via air express to save thousands of dollars for operators of S.S. American Trader

Here's an unusual story of how a G-E marine service shop helped to cut port time for a vessel stranded 4,000 miles away! Last August 4th the New York office of the American Trading & Production Corp. received a transatlantic telephone call from the captain of their ship, the S. S. *American Trader* (ex-*Marne*). The rotor of his main generator was damaged beyond repair. No replacement was available—the nearest one was in the United States. Could it be flown to London immediately? In Hoboken the operator had a spare rotor placed on a truck bound for LaGuardia Airport. Then the bad "break" came!

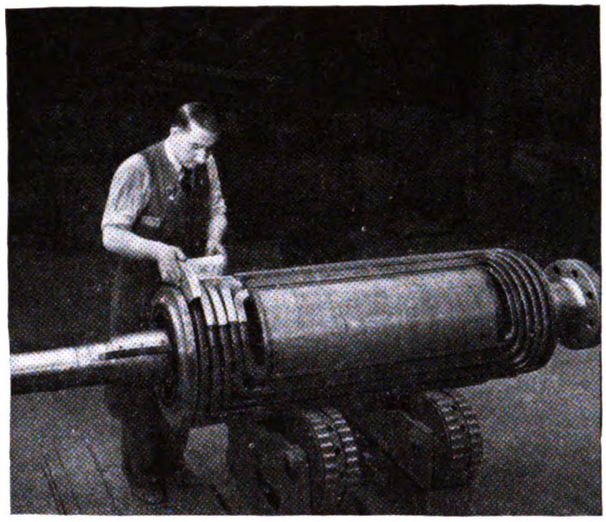
Rotor breaks loose!

Two miles from the airport, the rotor ripped loose from its moorings and fell from the truck. Immediately, a G-E marine engineer was called to the scene to determine the extent of damage. The rotor had to be taken into G-E's New York service shop for repairs requiring at least seven days. And the ship was counting on a replacement within forty-eight hours!

Arrives on time!

In this emergency the G-E service shop came through with an identical rotor. It was tested in eight hours instead of the usual 16 and rushed to the airport. Forty-eight hours later, it was being lowered into the engine room of the *American Trader*. On the next day, it passed dock trials successfully and the ship was ready to sail with thousands of dollars of port time saved.

Saving the owner port time has become a habit with G-E marine service shops. That's because these shops are backed by the shipping industry's most complete marine service organization. We'd like to tell you more about it . . . about the million-dollar warehouse stocks of replacement parts located in New York and San Francisco and how these warehouses can supply everything from a turbine rotor to a voltmeter (in 24 hours if necessary). We'd also like to tell you about G-E's 18 marine service shops, located in every major coast and inland port and staffed with competent marine engineers and service technicians. The whole story is in our new bulletin entitled "When Your Ship Comes In . . . ". Send for your free copy today. Address: General Electric Company, Sec. AI-4693, 1 River Road, Schenectady 5, N. Y.



A skilled technician places aluminum saddles on the end windings of a turbine-generator's revolving field. In General Electric's 18 marine service shops technicians are trained to speed repairs, thereby cutting port time and saving money for the owner.

KEEP 'EM SAILING **SERVICE**

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Specify the Fathometer for EXTRA SAFETY FACTORS

Read these Facts Concerning Vibration Protection... Tube Operating Levels... Shielding... The Extra Dependability Fathometer Gives You

Of course, Fathometer automatically measures the depth of water under your keel. But more than that, it provides extra operating safety in fog, storm, and darkness. And it also gives you *another* extra—*extra dependability.*

Every Fathometer part is the studied result of two decades of experience with thousands of vessels of every type. In addition, all the components have an *extra* margin of safety. Tubes, for instance, operate well below rating. The important timing motor is exceptionally well balanced with ample reserve power. There's extra shielding throughout; extra rigidity. It's vibration protected; splash protected.

So, for *extra reliability* always specify Fathometer. Take advantage of the "know-how" which Fathometer engineers have built into this marine safety equipment.

SUBMARINE SIGNAL COMPANY
160 Washington St. No., Dept. 1112, Boston 14, Mass.

FATHOMETER

(Trademark Reg. U.S. Pat. Off.)

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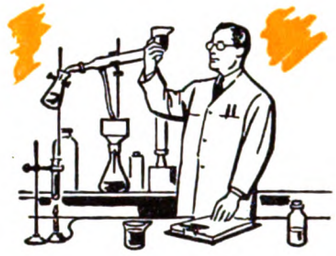
Shell Research developed this

SHELL TURBO OIL

to help extend the running time of turbines

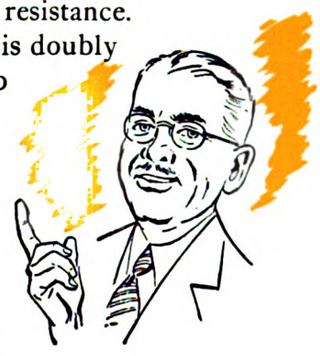
Weak oils can cut down turbine efficiency

Likely you've seen what happens—how ordinary oils oxidize, break down into sludge, "gum up the works"—even cause rust. Result: shorter running time and higher operating costs.



Shell's answer: a doubly fortified lubricant

Shell Research specifically developed an oil for turbine use—Shell Turbo Oil. To build this oil, Shell selects only crude stocks naturally high in oxidation stability—sludge resistance. Then, with Shell-developed additives, Shell Turbo Oil is doubly fortified. Once to build up its naturally high resistance to oxidation. Again to assure exceptional rust-preventing quality.



What you as a Shell Turbo user can expect

Little or no trace of sludge, no rust, no breakdown in the oil. In fact, Shell Turbo Oil has been delivering exactly that kind of lubrication performance in all types of installations—and always to the end of extending the running time of turbines.

SHELL

ARE YOU ABSOLUTELY SURE YOU ARE GETTING ALL THAT'S NEW IN LUBRICATION?

Your Shell Lubrication Engineer can make a complete study and analysis of your plant and machines... give you engineering counsel, advice on new lubricants and their application... help you set up schedules and controls for each and every machine. For that kind of service, call in your Shell Lubrication Engineer.

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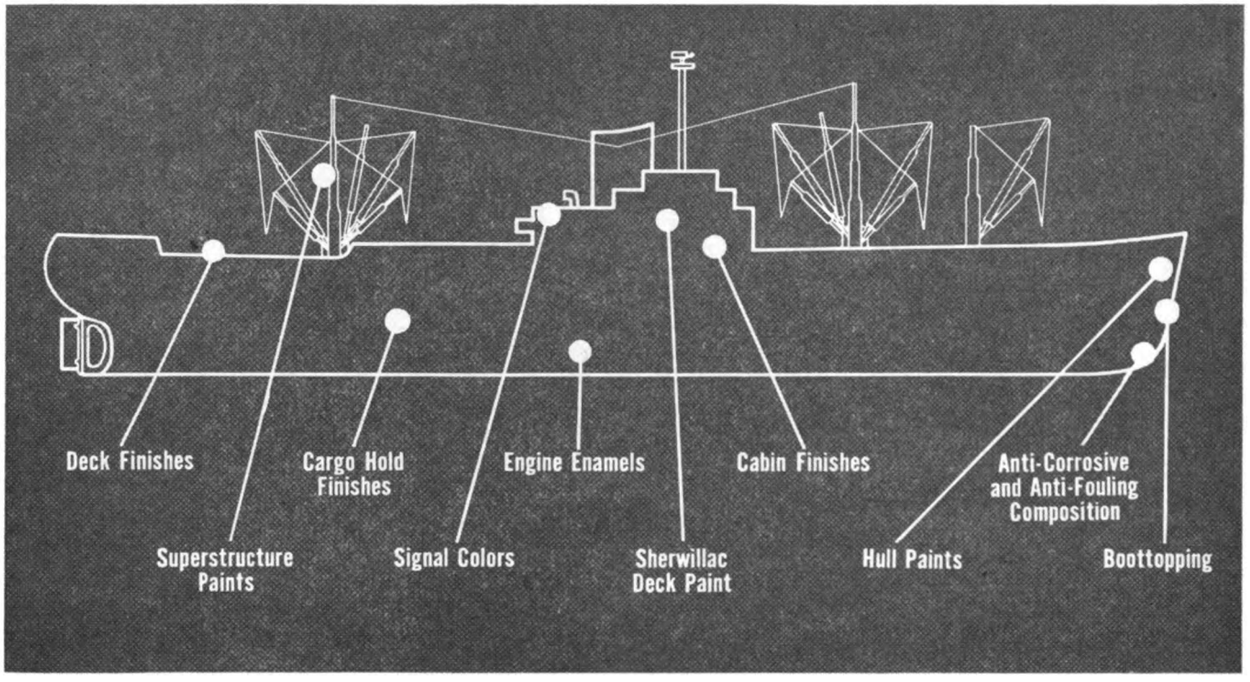

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Whatever your finishing needs, there's a complete stock of Sherwin-Williams Marine Finishes for immediate delivery at 15 important ports on the Atlantic and Pacific coasts and the Gulf of Mexico!

Take advantage of this extensive Sherwin-Williams network . . . and use the highest quality marine finishes made by the world's largest paint manufacturer. Remember, when you specify Sherwin-Williams Marine Finishes, you're specifying the *best paint money can buy*—made under exacting standards to meet exacting conditions on the high seas! The Sherwin-Williams Co., Marine Division, Cleveland 1, Ohio. (Export Division, Newark, N. J.)

Products of SHERWIN-WILLIAMS Industrial Research

COVER THE EARTH

SHERWIN-WILLIAMS MARINE FINISHES

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Corpus Christi • Brownsville • Los Angeles • Oakland • Seattle • Portland, Ore.

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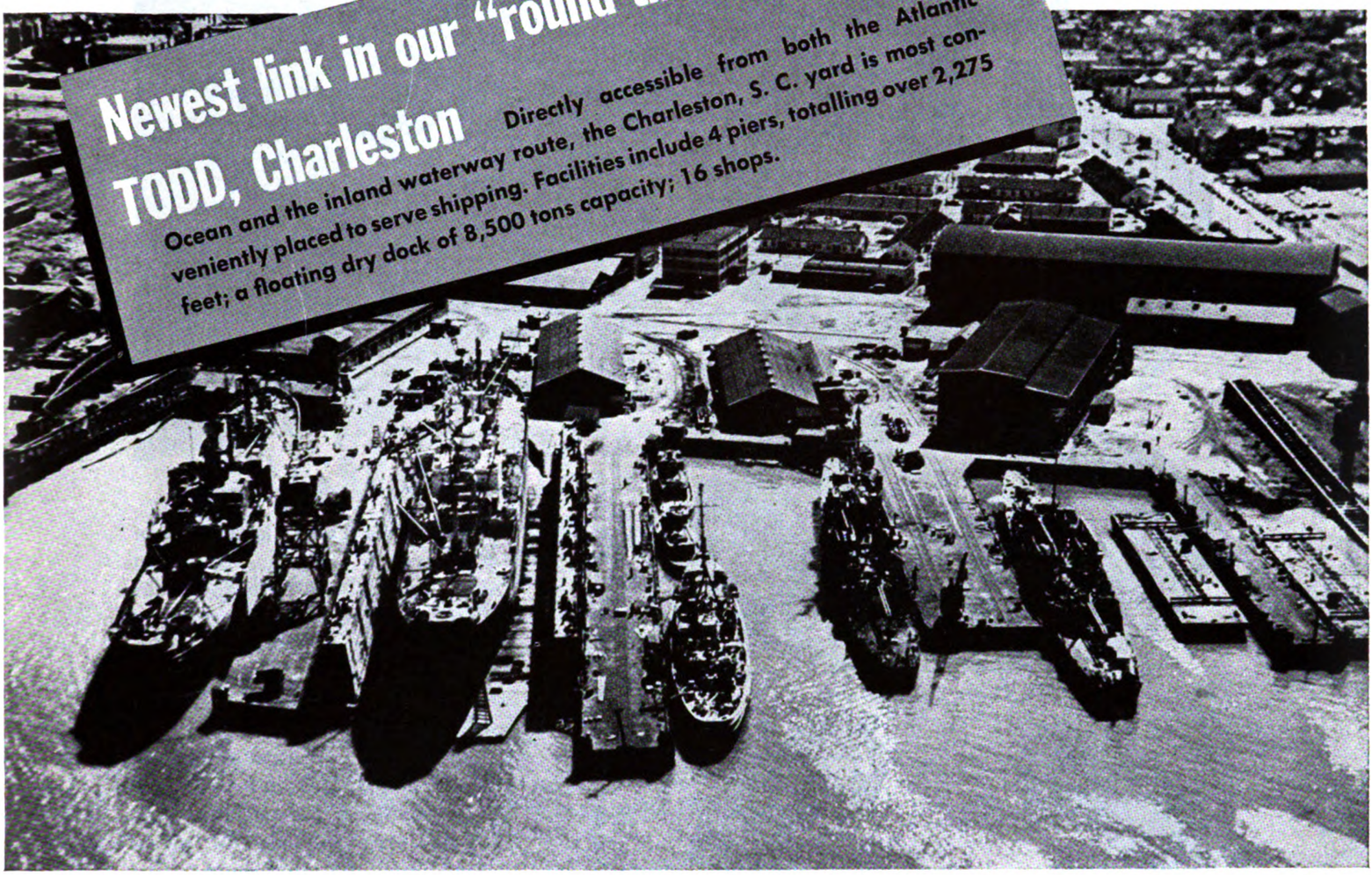
Newest link in our "round-the-coast" Chain...

TODD, Charleston

Directly accessible from both the Atlantic Ocean and the inland waterway route, the Charleston, S. C. yard is most conveniently placed to serve shipping. Facilities include 4 piers, totalling over 2,275 feet; a floating dry dock of 8,500 tons capacity; 16 shops.



• *Airview of Todd yard, Charleston, S. C. on west bank of Cooper River. Dry dock capacity recently increased to lift T-2 tankers.*

Whether a vessel makes her landfall on the Atlantic, Gulf or Pacific coast of the United States, there is a Todd shipyard nearby, amply equipped and staffed to serve her, whether routine overhaul, extensive repair or conversion work is required.

Tug, barge, lighter, freighter, tanker, liner—Todd shipyards are ready to handle your vessel, with speed and economy. At one end of the scale, is the quick mobile service available for ships at anchor or at dockside . . . at the other, the staffs of naval architects, marine engineers and other specialists always available to work alone or with your consultants.

Whatever service your vessel may need, call on TODD for expert work!

***WET SAND BLAST PROCESS** of removing scale from anchor chains or ships surfaces—superior to chipping, scraping or wire-brushing.*

TODD SHIPYARDS CORPORATION

CHARLESTON DIVISION

Conveniently located on Atlantic, Gulf and Pacific Coasts

NEW YORK BROOKLYN HOBOKEN CHARLESTON, S. C. NEW ORLEANS
GALVESTON LOS ANGELES SEATTLE BARRANQUILLA

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NACO E-Z Anchor Joining Link

NACO Chain Joining Link

STRONG AS NACO CHAIN

All the superior strength and safety of NACO Anchor Chain are built into NACO and NACO E-Z Joining Links and Anchor Joining Links. They're made of the same special NACO steel—with 10% greater strength than the specification proof load . . . 40% higher than wrought iron of the same size.

Both types of links are of similar size and shape to the chain with which they're used. Joining is quick and sure. They ride easily and smoothly, saving time and trouble when paying out or heaving in the anchor.

For the finest combination of speed and safety—specify NACO Chain and NACO Links.

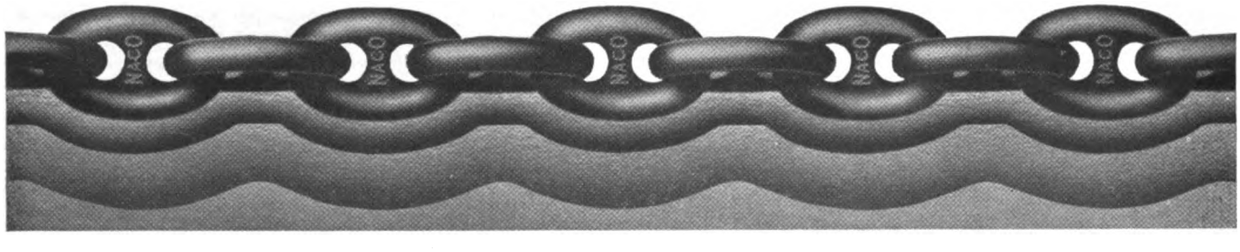
M&S Co. EST. 1868

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY, Cleveland, Ohio

Pacific Coast Representative: **C. J. Hendry Company, 27 Main Street, San Francisco 6, Calif.**

NACO ANCHOR CHAIN

TRADE MARK



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1948—The fiftieth anniversary of the Diesel engine in American service . . .

The history of the industry documents many achievements by Fairbanks, Morse & Co. in the design and production of Diesel engines . . .

There will be more, in the years ahead . . .

Fairbanks, Morse & Co., Chicago 5, Ill.

When it comes to Diesels . . .

FAIRBANKS-MORSE

A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • STOKERS
SCALES • MOTORS • GENERATORS • PUMPS • FARM EQUIPMENT
MAGNETOS • RAILROAD MOTOR CARS and STANDPIPES

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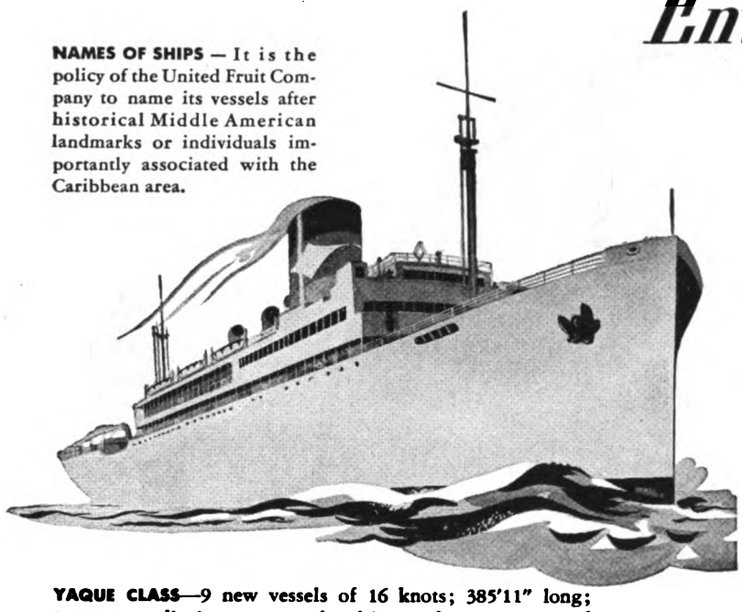
Envoys of Mutual Enterprise

NAMES OF SHIPS — It is the policy of the United Fruit Company to name its vessels after historical Middle American landmarks or individuals importantly associated with the Caribbean area.



These are the American Flag vessels which spearhead the United Fruit Company's Great White Fleet in the Middle American Trade. Eighteen are fast, fully refrigerated cargo vessels, new as tomorrow's mail. Six are handsomely reconditioned cargo-passenger liners of established Caribbean cruise distinction. These twenty-four vessels become envoys of mutual enterprise between the Americas—tangible expression of one Company's interpretation of the Good Neighbor Policy.

YAQUE CLASS—9 new vessels of 16 knots; 385'11" long; 9,338 tons displacement; and refrigerated cargo space of approx. 197,000 cubic feet. Accommodations for 12 passengers.

FRA BERLANGA CLASS—9 new 18.5 knot twin screw ships... 455'5" long, with 12,890 tons displacement, and refrigerated cargo capacity of approx. 318,000 cubic feet. Accommodations for 12 passengers.

TALAMANCA CLASS — 6 completely reconditioned passenger-cargo luxury liners, offering first class accommodations for 95 passengers. All rooms face the sea. Permanent outdoor pools, spacious promenades and public rooms, sound movies.

GREAT WHITE FLEET

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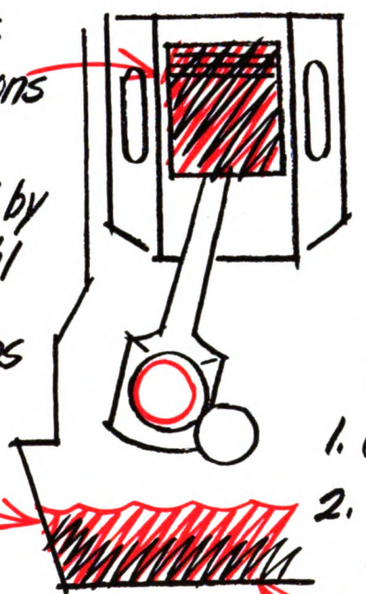
LUBE MEMO

Crankcase Sludge causes Hot Lube Oil troubles

Hot oil oxidizes fast, gums pistons

Sludge formed by ordinary lube oil insulates crankcase, keeps oil hot



Foreman says try RPM DELO Diesel Engine Lubricating Oil – its compounds stop sludging 3 ways:

1. Oil oxidation slowed up
2. Gum and lacquer cleared out.
3. Contaminants held in suspension – flushed out when oil is changed.

Tell foreman OK to order RPM DELO Oil

DIESEL ENGINE RPM DELO LUBRICATING OIL

STANDARD OF CALIFORNIA

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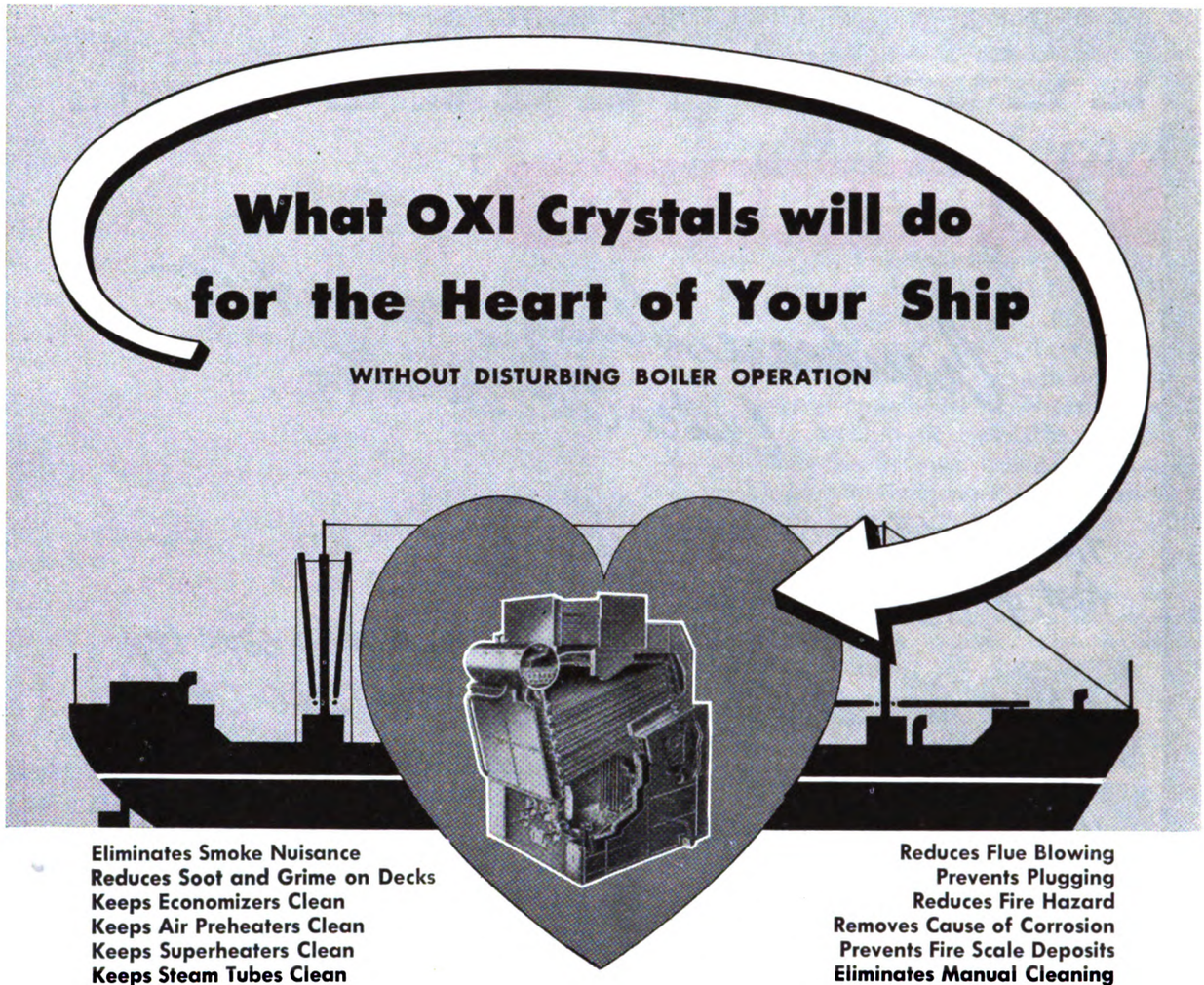
What OXI Crystals will do for the Heart of Your Ship

WITHOUT DISTURBING BOILER OPERATION



Eliminates Smoke Nuisance
Reduces Soot and Grime on Decks
Keeps Economizers Clean
Keeps Air Preheaters Clean
Keeps Superheaters Clean
Keeps Steam Tubes Clean
Keeps Water Walls Clean

Reduces Flue Blowing
Prevents Plugging
Reduces Fire Hazard
Removes Cause of Corrosion
Prevents Fire Scale Deposits
Eliminates Manual Cleaning
Reduces Fire Scale to Ash

CHEMICALLY CLEANS THE ENTIRE FIRESIDE OF BOILERS

FREE OXI SERVICE

At your request and without cost or obligation, one of our qualified trained engineers will inspect your boilers when in port, and submit to you a written report regarding the results that can be obtained with the Oxi Chemical Process. He will make the initial application and instruct your operating engineers in the most effective method to get maximum results in your boiler. He will then inspect your boilers periodically and submit reports of progress.

Consult an Oxi Field Engineer—now available at major ports—or write our General Office for further information.

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THE NATIONAL ARCHIVES
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FEDERAL REGISTER

DAYNITE

REG. U. S. PAT. OFF.

SMOKE FLARE DISTRESS SIGNALS

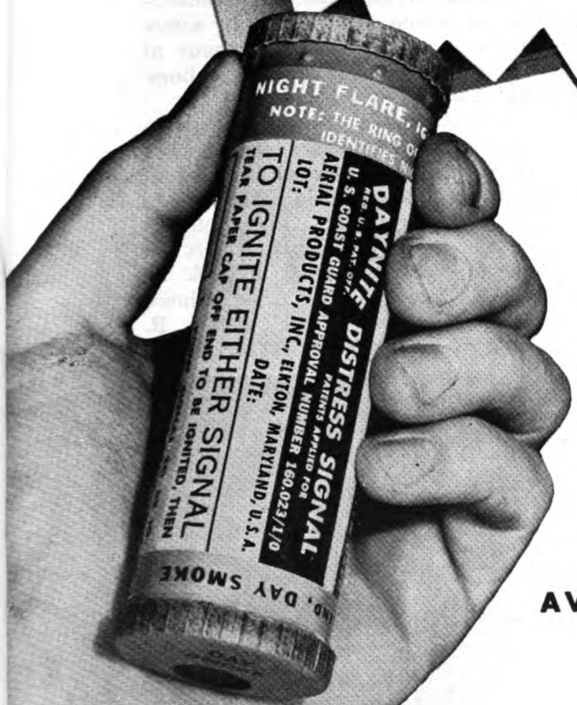
IN WATER-TIGHT BRASS CONTAINER OF 12*

Now Available

For Ships Outfitting to Meet Revised Coast Guard Regulations Covering Distress Signals Federal Register, October 31, 1947

(Above) DAYNITE bra container showi snap-action lockii hooks for water-tig seal on rubber compre sion gasket. Contain overall only 9⅜" x 6¾ x 6½" — less than cubic foot. DAYNI container with its co bination of 12 flar and 12 smoke signa takes less than 1/5 t cubic volume of spa previously needed stow 12 fireworks-typ paper-wrapped flar and 4 bulky smoke po

(Left) Container top moved to show care packaging of 12 DA NITES in each wat tight brass contain



DAYNITE DISTRESS SIGNAL 3/4 actual size. Note: Night Flare and Day Smoke signals combined in opposite ends of water-tight, double-wall, hermetically sealed steel container only 5⅛" long, weighing

U. S. C. G. APPROVAL NO. 160.023/1/0

● ***To Increase Safety At Sea*** the U.S. Coast Guard has made drastic revision in regulations for distress signals to be carried in lifeboats, life rafts and in the pilot house or on the navigator's bridge of vessels of 150 or more tons burden.

● ***The New Regulations*** set high standards of water-tightness and performance-reliability for pyrotechnic distress signals . . . limit their use to three years from date of manufacture . . . provide that signals *not bearing a date of manufacture under the new specifications cannot be carried after January 1, 1949.*

● ***Daynite Distress Signals*** and their water-tight brass container meet U.S.C.G. requirements in every respect . . . were first to receive Official Approval, (No. 160.023/1/0) Federal Register November 1, 1947. Previously Daynite Distress Signals had been approved by Civil Aeronautics Administration, Air Transport Association and many foreign governments. They are standard for U. S. Armed Forces; 1,500,000 having been delivered to the Services.

● ***Absolutely Dependable*** hand-held Daynite Distress Signals provide a vivid orange day-smoke and a brilliant red flare at opposite ends of each water-tight signal. Ignited by an unfailingly simple pull-ring igniter, DAYNITE Distress Signals actually burn under water . . . cannot be extinguished by wind or waves.

AVAILABLE THROUGH SHIP CHANDLERS AT ALL PORTS

*Watertight Brass Container of 6 DAYNITE DISTRESS Signals also available to conform to regulations covering liferafts on Great Lakes vessels (Pg. 7073 Federal Register, Oct. 31, 1947)

AERIAL PRODUCTS, Inc.

ELKTON, MARYLAND

SHAFT ALLEY Chatter

Federoff Becomes General Eastern Manager for Waterman

W. B. Garner, executive vice president of the Waterman Steamship Corporation, has announced the appointment of Daniel Federoff as general eastern manager of the company, with headquarters at 19 Rector St., New York City. Mr. Federoff, whose shipping experience has covered a period of 30 years, was assistant director in the Gulf Coast District for the War Shipping Administration during the last war, and since the first of the year he has been stationed at Waterman's home office at Mobile, Alabama.

The corporation has also announced that Mr. J. W. O. von Herbulis of New York City, a vice president of Waterman Steamship Corporation, was elected a member of its Board of Directors. Mr. von Herbulis will continue to make his headquarters in New York City and supervise the North Atlantic Coast activities of the Corporation.

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MacMahon Directs Expanded States Marine Activities

States Marine Corporation have expanded their Southern California activities with the assumption of their new agency agreement with Dodero Lines, reportedly the largest private steamship operator in Argentina, boasting a fleet of 138 ships, up to 17,000 tons. The first Dodero Lines' ship calling at the port was the ss TROPERO.

Supervising States Marine operations in Southern California is E. A. "Ernie" MacMahon, recently appointed district manager for the corporation, whose main offices are at 90 Broad Street, New York, with Pacific Coast headquarters in San Francisco. Well-known in shipping circles MacMahon for many years was district manager for Luckenbach Steamship Co., is past president of the Propeller Club, Port of Los Angeles-Long Beach, is past national vice president of the Propeller Club, and a past president of the Los Angeles Steamship Association.

Assisting MacMahon is Alvin Colflesh with long experience in shipping. Terminal superintendent for States Marine is L. S. Copeland, who headquarters at Pier A, Berth 5, Port of Long Beach. Copeland formerly held the comparable post with De La Rama Steamship Co., Inc. During the war he served as captain in the U. S. Army Transportation Corps.

Wilcox Elected Vice President Of Seatrain Lines, Inc.

Election of M. L. Wilcox as vice president of Seatrain Lines, Inc., was disclosed by Graham M. Brush, president. Mr. Wilcox was with United Fruit Co. for 27 years and resigned from that company's operating and traffic departments to take his new position.

During the war he served in Washington as director of operations and then in Havana as director of the Caribbean region of the War Shipping Administration.

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Big Mike Joins Tollefsen Brothers

George (Big Mike) Mikkelsen, formerly general manager of the Erie & St. Lawrence Corporation, has been appointed general manager in charge of all operations of the Oil Tank & Ship Service Corporation, a Maryland corporation, located at Pier 7, Light Street, Baltimore 2, Maryland, (formerly the Baltimore branch of Tollefsen Brothers).

Mr. Mikkelsen is also appointed marine superintendent of all tanker equipment of the Oil Tank Cleaning Corporation, 107-127 Twenty Seventh Street, Brooklyn 32, New York, a New York Corporation, which company owns and operates several modern self propelled harbor tankers used exclusively for the cleaning of tankers by the vacuum process and butterworthing systems. In his new capacity, Mr. Mikkelsen is available as an expert consultant on the various problems confronting operators in the Great Lakes, its tributaries and the New York State waterways, such as salvage work, cargo gear, reciprocal chartering, etc.

A Whale of a Story

The Alcoa Steamship Company's senior fleet captain, B. H. Oiestad, hit a 35-foot whale, his first in more than 20 years, and "a rare occurrence in the Caribbean," he said in New Orleans as he skippered the Alcoa CLIPPER into her home port.

"We felt the thud when she hit directly across the bow," he said, "and could feel the bumping of the tail against the ship. "The whale was about 35 feet long—about two-thirds one side of the bow and one-third on the other," he continued. "We carried it for about half an hour, feeling the bumping as it struggled to free itself. Then we stopped the ship and the whale dropped off. The passengers thought it was great excitement and wished they could get pictures."

"More than 20 years ago I hit one like that in the Atlantic," said Captain Oiestad. "But it is extremely rare to find one in the Caribbean."

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U.S. Lines Quarter Century Elect Officers

Members of the Quarter Century Club of the United States Lines, now numbering 146 of whom 89 are still in active service, were guests of the company at the annual dinner held aboard the lines' flagship AMERICA.

James C. Anderson, assistant comptroller, who has had 37 years' service, was elected president to succeed Gaillard F. Ravenel, vice president of the line in charge of operations. Other officers elected were vice presidents, Albert De Smedt, 44 years' service, and E. A. Werckle, 43 years' service; Anne Bohnet, secretary, 28 years' service, and J. R. Pickering, treasurer, 38 years' service.

STATES MARINE CORPORATION expands activities in Southern California under the direction of ERNIE A. MacMAHON, center; District Manager; ALVIN COLFLESH, Assistant, left; with headquarters at 530 W. Sixth St., Los Angeles; and L. S. COPELAND, Terminal Superintendent, Pier A, Berth 5, Port of Long Beach.

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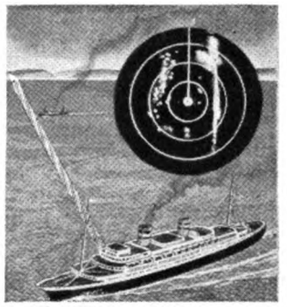
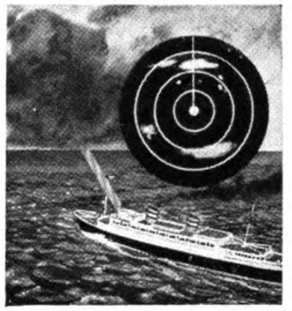
1. PILOTAGE



2. POSITION FINDING

3. ANTI-COLLISION



4. STORM DETECTION

Radiomarine's 3.2cm 4-PURPOSE RADAR

...now aboard the liner NIEUW AMSTERDAM

Mr. Arnold Webster, Senior Second Mate and navigating officer of the NIEUW AMSTERDAM, viewing the 12-inch scope of the Radiomarine Radar.

"We are very well satisfied with the over-all performance of our Radiomarine Radar," says Commodore Siebe Vlietstra, Master of the S.S. NIEUW AMSTERDAM, Flagship of the Holland-America Line.

"It is used a great deal for navigation on our trips between Rotterdam and New York. Radar is used every time the ship has to make a landfall under poor weather conditions. We have been able to pick up high coastlines at 50 miles.

"Small buoys marking the sailing lanes in the English Channel have been observed at distances up to 6 to 7 miles.

"The NIEUW AMSTERDAM, off Cape Hatteras, picked up on radar, an unmanned and floundering LST at 8 miles at night. We contacted the U.S. Coast Guard and gave them its exact location. On one trip using our radar we located a Catalina Flying Boat which flew out to the ship to drop serum. The flying boat was picked up at 9 miles and was tracked all the way to our ship.

"Ships have been picked up and plotted in heavy rain."

You get all 4 Navigational Aids with Radiomarine 3.2cm Radar

Ship operators get more for their money with Radiomarine's 3.2cm Radar. Its *all-purpose* application is the answer to faster, safer, more dependable navigation at sea, in harbors or on inland waters.

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SHAFT ALLEY (continued) Chatter

NEW PRESIDENT OF NEW ORLEANS' PROPELLER CLUB . . . HARRY X. KELLY, Vice President in Charge of Operations of Mississippi Shipping Company.

Harry Kelly New President New Orleans' Propeller Club

Harry X. Kelly, vice president in charge of operations of Mississippi Shipping Company (Delta Line), was elected president of the Propeller Club of the United States, Port of New Orleans, at a meeting last month. E. A. Schlesinger, Jr., was elected first vice president; J. B. Richardson, second vice president; S. M. Lecourt, secretary, and S. S. Giallanza, treasurer.

Members of the board of directors named were H. H. Collins, G. T. Finlay, G. W. Hill, E. A. Jimison, E. H. Lockenberg, J. A. Marquette, William E. McCardell, S. M. Rosamond and T. J. Smith.

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Southern California Naval Architects Plan Future

On May 18, the Southern California Section—The Society of Naval Architects and Marine Engineers, will hold its second general membership meeting, at the Hotel Lafayette, Long Beach. A paper devoted to the general subject of ship propulsion is scheduled, tentatively.

Future plans of the organization include holding at least one general meeting in San Diego, according to Arthur Pegg, Sr., secretary. President of the newly formed group is Karl French, naval architect of San Pedro.

Regular monthly meetings are to be held on the evenings of the 3rd Tuesday of each month, except July and August, according to a vote of the governors.

Frazer A. Bailey to be Seattle Maritime Day Speaker

Frazer A. Bailey, president, National Federation of American Shipping, Inc. is announced as the speaker for National Maritime Day observance at Seattle. Open house on the newly renovated and converted ss GEORGE WASHINGTON on May 18 is also announced. With work being carried out by the Puget Sound Bridge and Dredging Company, Seattle, the GEORGE WASHINGTON is being fitted to accommodate 250 passengers and a small amount of refrigerated cargo, for operation by Alaska Transportation Company between Puget Sound ports and Southeastern Alaska.

Plans for observance of World Trade Week and National Maritime Day at Seattle are being developed in a cooperative move which has brought all interested groups together into one general committee. Colonel Warren D. Lamport, general manager, Port of Seattle, is acting as general chairman. Groups participating in the coordinated action include Port of Seattle, Seattle Chamber of Commerce, City of Seattle, Waterfront Employers of Washington, Propeller Club of Seattle, Society of Port Engineers of Puget Sound, World Trade Club, Department of Commerce, Customs Brokers and Freight Forwarders Association, Labor Unions, Transportation Club, U. S. Merchant Marine Alumni Association, and others. G. J. Ackerman, operating manager, American Mail Line, who was instrumental in arranging for Frazer A. Bailey as banquet speaker, heads the banquet committee.

Naval Architects Schedule Spring Meeting

Shipbuilders, ship operators and marine equipment manufacturers from all sections of the country will gather in the Tidewater Virginia area for the Annual Spring Meeting of The Society of Naval Architects and Marine Engineers on Thursday and Friday, May 27 and 28, 1948.

A committee on arrangements under the chairmanship of Rear Admiral N. L. Rawlings, USN, (Retired), has been appointed to develop and supervise the program for the two day session.

Headquarters will be at the Chamberlin Hotel, Old Point Comfort. A technical session will be held on Thursday morning, at which several technical papers on current marine problems and subjects will be presented. A specially conducted tour arranged for the members will be made on Thursday afternoon of the Langley Laboratory of the National Advisory Committee for Aeronautics. A reception and informal dinner in the Virginia Room of the Chamberlin Hotel will high-light the program.

On Friday visits will be made to the shipyard and hydraulic laboratory of the Newport News Shipbuilding and Dry Dock Company, and to the Mariners' Museum. Friday afternoon will be devoted to visiting places of historical interest in the vicinity.

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Mississippi Shipping Names DEL MAR Cruise Director

William Nichols, formerly connected with the passenger department of the Alcoa Steamship Company at New Orleans, has been made cruise director of the DEL MAR, Mississippi Shipping Company (Delta Line) luxury ship which operates on 47 day South American cruises.

CRESCENT TOURIST . . . When WILLIAM C. WHITE, right, President of the Alcoa Steamship Co., arrived in New Orleans last month aboard the ALCOA CLIPPER from a West Indian cruise and a visit to the world's largest source of bauxite, WILLIAM H. TRAUTH, Gulf Manager of Alcoa was on hand to welcome him to New Orleans and demonstrate the company's modern facilities at No. 1 Canal Street. Mr. White made what is called the "Crescent Tour," which enables Alcoa passengers to sail from New York, then transfer to a New Orleans bound ship of the line at Trinidad.

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ALCOA *sails the* CARIBBEAN

The homes of the Caribbean area boast many products such as automobiles, drugs, clothes, shoes and packaged foods, labeled "Made in USA." They've been paid for with petroleum, bauxite, sugar and other raw materials that we in turn need. Set against the Caribbean's background of bright tropical scenery, picturesque places, and sun-drenched beaches are thriving markets, served by passenger and cargo ships of the Alcoa fleet. Alcoa Steamship Company, Inc., 17 Battery Place, New York 4, N. Y., or One Canal Street, New Orleans 16, La.

ALCOA STEAMSHIP COMPANY, INC.

OFFICES IN: BALTIMORE, CHICAGO, MOBILE, MONTREAL, NEW ORLEANS, NEW YORK, ST. LOUIS, TORONTO

This advertisement in leading magazines is helping to acquaint the public with the excellent freight and travel facilities now offered by ships of the American Merchant Marine.

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SHAFT ALLEY (continued) Chatter

Henderson New Commissary Supt. of Export Lines

Frank I. Henderson has been named commissary superintendent of American Export Lines according to announcement by L. S. Andrews, operating manager of the company.

As a Lieutenant Commander in the United States Maritime Service, Mr. Henderson was in charge of the Stewards' Training School established at Sheepshead Bay. Under his direction thousands of men were trained for service on merchant vessels during the war, and also for service aboard postwar American passenger liners.

In addition to his recent six-year tour of duty, Mr. Henderson served in the Naval Reserve for two years during the first war. He is a veteran of 28 years' service in steamship stewards' departments.

California Naval Architects Elect New Officers

New chairman of the Northern California Section of The Society of Naval Architects and Marine Engineers is Harold P. Champlain, San Francisco, division marine superintendent for the United Fruit Company.

Mr. Champlain, who was elected at the April meeting of the Society to succeed William B. Warren, American Bureau of Shipping, is a graduate in naval architecture and marine engineering from the Massachusetts Institute of Technology and has been with United Fruit for about 18 years. In his present post he is in charge of that firm's west coast marine operations.

Elected to serve as vice chairman was Harvard P. (Bud) Stewart, sales manager of the Bethlehem Steel Company, shipbuilding division, San Francisco.

Leslie L. White, chief surveyor of the construction and repair department of Matson Navigation Company, was re-elected secretary-treasurer.

On the executive committee of the Section are Mr. Warren, Moritz H. Jaehne, Standard Oil Company; Sewell A. Knapp, Moore Dry Dock Company, and George L. Crow, General Electric Company.

At the April meeting colored sound pictures were shown of the interesting and dramatic operations on Puget Sound by which 5,774,496 cans of Alaska salmon were salvaged by suction from the hold of the motor ship DIAMOND KNOT sunk in a collision with the ss FENN VICTORY while enroute from Bristol Bay to Seattle with 7,407,168 cans aboard.

Walter Martignoni of the San Francisco marine engineering firm of Pillsbury & Martignoni, who directed the salvage operations, for the Fireman's Fund Insurance Co., was present at the meeting, explained the procedure and answered questions.

The next meeting of the Northern California Society is scheduled for June 4th to hear a paper by Roy A. Hundley, chief engineer of the Enterprise Engine & Foundry Company, San Francisco, titled "The Designer Had a Reason for It." Mr. Hundley will discuss the many phases of Diesel engine design as affected by application and explain why Diesels are designed as they are.

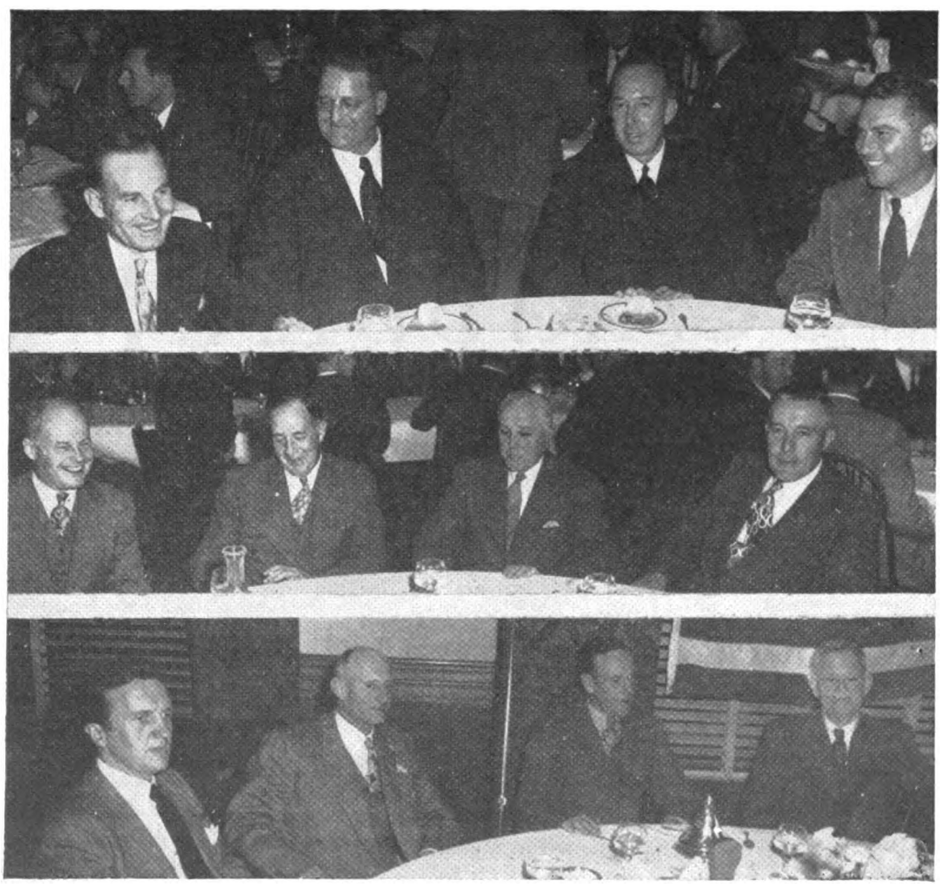
Meeting after next will be on October 1st when Ross Laurenson of the University of California is scheduled to give a paper on the stability of derrick barges.

An all-time record high attendance of 152 was at the April meeting.

NORTHERN CALIFORNIA SECTION OF THE SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS ELECT OFFICERS . . . Top row left to right: LESLIE L. WHITE, Secretary Treasurer; HAROLD P. CHAMPLAIN, new Chairman; E. J. BRADLEY, Freight Traffic Manager, Matson Navigation Company and HARVARD P. STEWART, new Vice Chairman.

Center row left to right: HARLAN M. SCOTT, Publisher The LOG; J. PAUL THOMPSON, Marine Surveyor and Consultant; HENRY V. BARBIERI, Officer in Charge, Marine Inspection, United States Coast Guard and SEWELL A. KNAPP, member of the Executive Committee.

Bottom row left to right: E. O. SCHARETG, Marine Claims Department, Fireman's Fund Insurance Company, who arranged and presented the colored motion picture: "The Story of the M. S. DIAMOND KNOT"; WALTER MARTIGNONI, who commented on the picture and answered the many questions regarding this unusual salvage job; WILLIAM B. WARREN, retiring Chairman and CAPTAIN ALBERT F. PILLSBURY, Senior Partner of Pillsbury & Martignoni. Captain Pillsbury was announced as having been a member of the Society 29 years.



Griffiths Interests Purchase Pioneer Seattle Tow Boat Firm

All outstanding stock of the Washington Tug and Barge Company, Seattle, has been purchased by the James Griffiths interests of Seattle. Assets include the tugs TRIUMPH, LARK, and RELIANCE, and a number of petroleum barges. Organized in 1909, operations of the towing concern in recent years have consisted principally in distribution of petroleum via barges between points on Puget Sound.

James F. Griffiths, newly named president of Washington Tug and Barge Company has announced an expansion program is planned. Award of contract to Commercial Ship Repair, Winslow Division, for a new 20 tank, 315,000 gallon capacity gasoline and light oil barge followed the announcement.

Ernie Johnson has left Pacific Tankers as port engineer at San Francisco and has rejoined Deconhil Shipping Company in the same capacity. Mr. Johnson was with Deconhil during the war.

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Announcing

KROMECAST

A NEW CHROME-BASE, HIGH-STRENGTH 3100 F REFRACTORY CASTABLE

B&W KROMECAST...another original development by B&W . . . combines important advantages never before available in chrome-base castables or plastics.

B&W KROMECAST...in addition to supplying chemical resistance at high temperatures to attack by molten slags, mill scale, and other reactive products:

possesses the ability to support loads at elevated temperatures *and can be used in vertical walls and many types of roof arches without support.*

has unusual volume stability at temperatures as high as 3100 F.

can be poured like ordinary concrete, plastered in place, or applied with a cement gun.

B&W KROMECAST means less time spent in building and repairing furnaces. It means longer continuous operating periods. It means lower overall production costs. It opens the way for many new applications that were impossible with previously available chrome-base plastics or castables.

SUGGESTED APPLICATIONS

HEARTHS

FURNACE WALLS

FLOORS

CAR TOPS

DOOR AND FRAME LININGS

ELECTRIC FURNACE ROOFS

FORMING SPECIAL SHAPES

PATCHING

For complete information on this new, unique chrome-base refractory castable, write for Bulletin R-26—or call your local B&W Refractories Engineer.

R-315

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C-E supplies steam for Diesel Ships

An advantageous method of providing steam aboard Diesel ships is exemplified by the C-E installation on the six new ships built for the French Government by the Tampa Shipbuilding Company, Inc., Tampa, Fla. These motor cargo ships are 372 feet overall and develop 7200 horsepower.

The exhaust from all of the six diesel engines, with which each ship is equipped, is discharged through a C-E Controlled Forced-Circulation Boiler of the waste heat type, which generates steam for the turbo-generators and various auxiliaries. For port and emergency use a C-E oil-fired standby boiler, also of the controlled forced-circulation type, is provided. The drum of the latter unit is used also by the waste heat boiler, a convenient arrangement made possible only by the forced circulation feature of the two units.

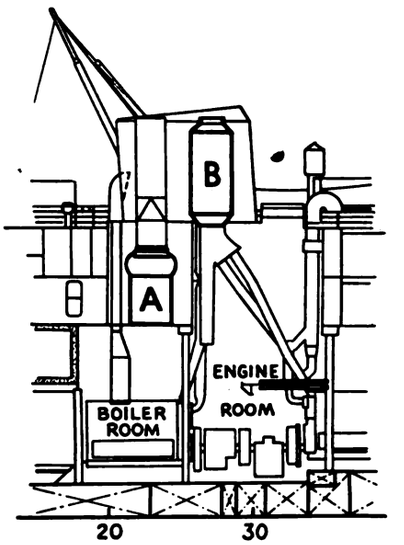
The waste heat boiler is divided into three generating sections, permitting control of steam output by manually operated valves. The oil-fired unit cuts in or out through automatic controls according to the fluctuations of steam demand.

Both boilers are equipped with superheaters for the steam supply to the turbo-generators. For fuel pumps, oil and water heaters, evaporators and other auxiliaries, steam is desuperheated.

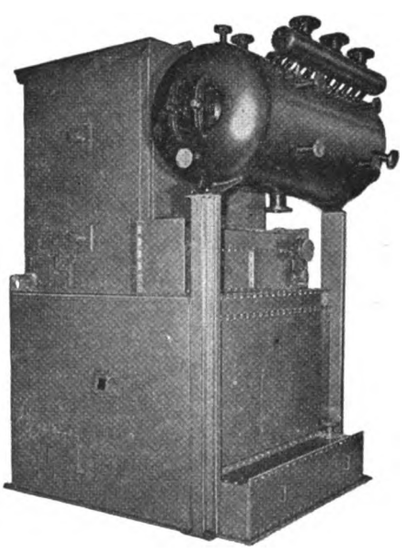
The application of C-E Controlled Forced-Circulation Waste Heat Boilers on these French ships illustrates one of their most desirable characteristics; i.e., how simply the design lends itself to any convenient location — in this case, the stack casing itself.

In addition to its complete line of natural circulation boilers, Combustion Engineering is prepared to offer controlled forced-circulation designs for main boiler units as well as the waste heat and auxiliary types here illustrated and described. Our engineers will welcome the opportunity to consult with you at any time.

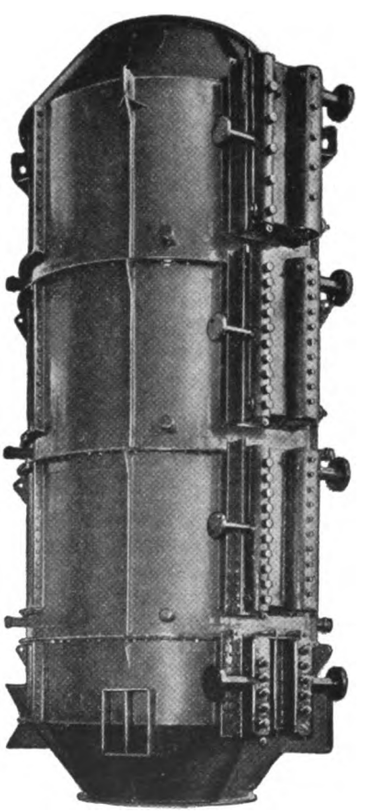
B-207-A



Starboard profile of engine and boiler room of French Diesel ships, showing ingenious arrangement of (A) C-E Oil-fired and (B) C-E Waste Heat Boilers in uptake.



Oil-fired C-E Forced-Circulation Boiler (A in diagram) for stand-by and emergency use. Steam drum is also used by Waste Heat Boiler. Capacity, 5800 lb of steam per hr at 171 psi and 617 F.



C-E Forced-Circulation Waste Heat Boiler (B in diagram) operating from exhaust gas from diesel engines, has a rated capacity of 3780 lb of steam per hr at 171 psi and 617 F.

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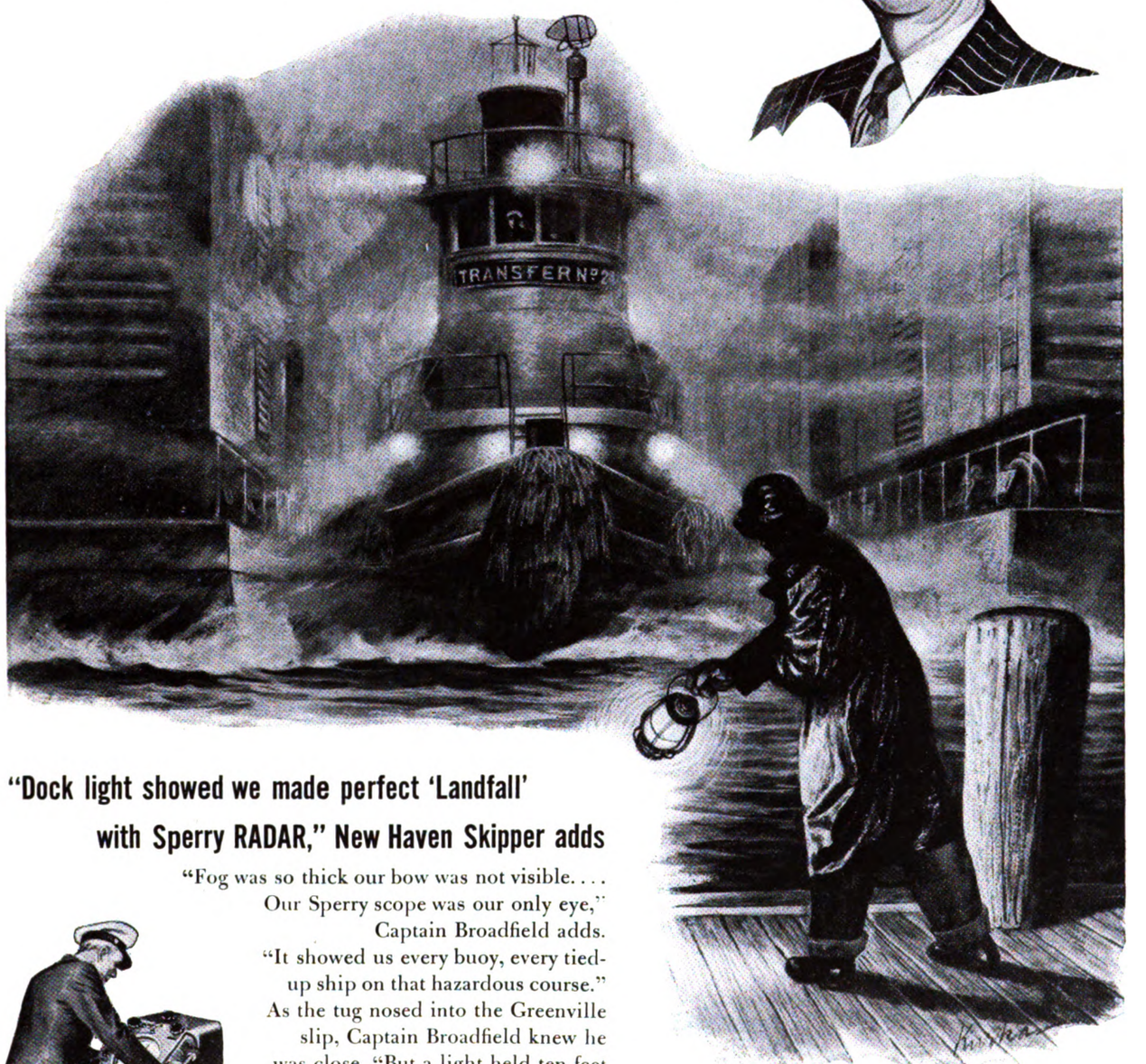
"Fog stopped shipping—we moved 302 cars," says Captain of Sperry RADAR-equipped tug

Only one craft moved that night as fog closed in New York Harbor—New Haven's Transfer No. 21, the first radar-equipped harbor tugboat. With Sperry radar as her "eyes," she ferried 302 urgently needed loaded freight cars between Greenville and Bay Ridge while other shipping "holed in." ". . . first time in our history we were able to tow freight cars on that always tough three and three-quarter mile run during a very thick fog," says Captain Charles Broadfield.



"Dock light showed we made perfect 'Landfall' with Sperry RADAR," New Haven Skipper adds

"Fog was so thick our bow was not visible. . . . Our Sperry scope was our only eye," Captain Broadfield adds. "It showed us every buoy, every tied-up ship on that hazardous course." As the tug nosed into the Greenville slip, Captain Broadfield knew he was close. "But a light held ten feet off our port bow showed a perfect 'landfall.'" The New Haven normally routes 1,200 New Haven and Long Island cars daily, but until Sperry radar was used, heavy fog and driving snow would interrupt the floating operations. ". . . a real relief for the freight car shortage," says the Captain.

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the LOG OF AMERICA'S MARITIME INDUSTRIES

Shipbuilding Naval Architecture
Ship and Port Operations
Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

MAY, 1948 Vol. 43, No. 5

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Editorial Features

Proposed New Liner—Can We Build It Under the '36 Act? 26
Merchant Marine Act of 1936—Can We Still Make It Work? 27
Propeller Club Conference—Middle Atlantic Region 32
Washington Reporting 34
Design Problems of a Modern Oil Tanker 38
U. S. Lines Announces Plans for New Superliner 42
Operating Ideas
How to Control Auxiliary Exhaust Steam Pressure 49
How to Determine Effects of Ship Bottom Fouling 50

Departments

Shaft Alley 16-21
The Society of Port Engineers 44-46
Operating Ideas 49-52
Equipmentalk 58-64

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To the Editor:

After reading the March issue of The LOG, it is only appropriate for me to offer congratulations upon the extent and value of the material in that issue.

Specifically, your articles on relations of steamship companies with their stevedore foremen, the articles on cargo handling developments, and the articles on lubrication of propulsion machinery were of special interest to me and deserving of special mention for their clarity and competence.

Yours sincerely,
(signed) Arthur B. Poole
Vice President and Treasurer
American President Lines

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Shipbuilders' Council Denounces Maritime Commission Drydock Plan

The U. S. Maritime Commission is proceeding with plans to expand its activities to the operation of drydocking facilities despite the contention of the Shipbuilding and Ship Repairing Industry that such a program would be detrimental to the National security and in fundamental opposition to American ideals regarding government entry into business fields.

Disclosure of the Commission's plans and of the industry's bitter denunciation of the program came when the Shipbuilders Council of America released an exchange of letters on the subject between H. Gerrish Smith, president of the Council, and Vice Admiral W. W. Smith (USN retired), chairman of the Commission.

The Council, representing the major shipbuilding and ship repairing yards in the United States, in a letter dated January 19, 1948, requested an oral hearing with the Commission on the grounds that the Commission's program would be a serious blow to an industry already suffering the effects of a serious decline in activity, detrimental to the national security which requires the strengthening and preservation of the industry, of doubtful financial advantage to the government, and would represent further government encroachment into the field of private business.

Despite this request of the industry, and after a considerable lapse of time, the Commission reaffirmed a previous decision to install these drydocking facilities without giving the industry an opportunity to be heard.

The Commission's program contemplates the towing of surplus navy drydocks to the sites of laid up reserve fleets and installing them there for periodic bottom inspection and accomplishment of underwater preservation of the laid-up vessels. The facilities would be operated by civil service personnel.

"The drydocking and repair of merchant vessels in peacetime normally constitutes the livelihood of the ship repairing branch of the industry," the Council's letter contended. "Like the shipbuilding branch of the industry, the ship repairing branch is essential to national security and it will not be available to perform its wartime functions unless it can remain a healthy and progressive industry in peacetime."

The Council said that installation and use of drydocks by the Commission at the reserve fleet sites "would be a further and most serious and dangerous advance" of the government into competition with private industry. It said that many of the surplus navy drydocks can be absorbed by the industry on a sale or lease basis, with commensurate financial return to the government, and that those not absorbed should be laid up for rapid installation where needed in the event of a national emergency.

In its letter to the Commission, the Council stated further that, "The initial cost of installing surplus Navy-owned drydocks at the reserve fleet sites will be heavy. Some of the docks available are located at great distances from the reserve fleet sites. The cost of moving each drydock to the reserve fleet site and there installing it will amount to hundreds of thousands of dollars. Installation will require extensive dredging, pile driving for mooring, construction of access piers, provisions for power, etc. Because of the generally isolated locations, office and living accommodations for the operating and administrative personnel may be required. Maintenance and operating costs likewise will be substantial. Periodical dredging will be required. Thus, the total cost of installing, operating and maintaining such facilities will be a very substantial amount."

The Council also pointed out that the Commission's present program might well lead it into the field of general ship repairing to the detriment of the national interest.

"The Council is mindful of your statement . . . that the Commission has no intention of utilizing these drydocks for the repair or reconditioning of vessels," the letter stated. "The Council is well aware, however, and the Commission must recognize, that there is an inevitable tendency toward growth in the employment of any installation, such as those contemplated. The pressure, economic and political, to find employment for idle or not fully used government facilities is unavoidable. The Council is also aware that government personnel is subject to change, and, as a result, government policy is likewise subject to change.

"Even though no repair facilities are installed at present in conjunction with a drydock at a reserve fleet site, underwater inspection may well reveal repairs that should be put in hand. The Commission is then faced with these alternatives: it may defer such repairs, or it may then undock the vessel, tow it to a private repair yard, have the vessel redocked and the repairs made, and then return the vessel to the reserve fleet.

"Neither alternative," the Council declared, "is in the national interest. If the first is adopted, in the event of a national emergency the vessel will then require drydocking and repair before it can be placed in operation and in all

(Continued on Page 52)

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PROPOSED NEW LINER---

Can we build it under the '36 Act?

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MERCHANT MARINE ACT OF 1936 CAN WE STILL MAKE IT WORK?

Here are differing views within the industry.

The outlook for foreign trade, after expiration of the ERP, is bleak at best. The prospects for domestic trade, coastwise and intercoastal, is no better, unless some spark enlightens the ICC. We are talking today of carrying fifty percent of our foreign trade—but how much this percentage represents in tonnage and ships is extremely variable.

With this dim view of the future of foreign trade, how are we going to maintain an American Merchant Marine adequate to our needs for commerce and defense? This is probably the toughest problem to face the maritime industry, Government and the Congress since the passing of the 1936 Merchant Marine Act. Will this Act prove adequate in the postwar era? Some think so, others not.

Because these problems are now confronting the industry, and Congress, The LOG is publishing this discussion of the Merchant Marine Act of 1936, and the views of the National Federation of American Shipping and Waterman Steamship Corporation.

EDITOR

Operating differential subsidy payments have been accruing since January 1, 1947, but no payments have been made to date. The Maritime Commission has not even approved the subsidy rates to be paid and some of the subsidized operators do not even want to be paid the subsidy at this time. With this confusing introduction we will try to make some sense out of a complicated and not too well understood subject.

At the outset one thing should be noted: Every national fleet throughout the world is subsidized in one way or other and the range of subsidy applications is an exceedingly broad one. While our own basic subsidy is the frank and explicit operating differential plan, we also practice other types.

The largest single subsidy category since the passage of the Merchant Marine Act of 1936 has been the construction differential. The American ship owners, however, have always insisted that the construction differential should not be counted as assistance to them. Its real purpose is to promote shipbuilding. It does not, under normal conditions, give any cost advantage to American ship owners that would not be available through foreign vessel purchases.

Less widely recognized but extremely important as subsidies to our shipping industry are the tax features of the 1936 Act. The Act provides for mandatory and optional "tax exempt" deposits in reserve funds, the chief purpose of which is to protect the Government's interest and to maintain a solvent and expanding Merchant Marine. Whether all these deposits are "tax exempt" as the Act says or only "tax deferred" as the Treasury says is a major technical question but one that need not concern us here. The important point to note is that during the present high earning period the tax privileges have been much more important to the subsidized operators than the gross operating differential payments before recaptures. One authoritative estimate is that the tax privileges have already saved the operators $70.0 million as compared with gross operating differential payments of $50.0 million.

While all of these subsidies figure prominently in the future of the American Merchant Marine, it is the operating differential principle that will raise the most critical issues. Some say that the American Merchant Marine in foreign trade may stand or fall on the application of this principle alone.

The Parity Principle

To make any sense out of the subsidy position today some understanding of the legislative history and political background is essential. In the early 1930's the ocean mail contracts came under critical fire. Simultaneously, Triple A and a wide range of agricultural subsidies were being introduced to the American people as a depression cure. Congress had the early experience of these agricultural subsidies as a background for considering the new plan of shipping assistance.

On one important point the Congress seemed determined: The operating subsidy must not be left to haphazard guess or administrative discretion. It was to be a subsidy which would bring American costs into parity with foreign competitive costs. No principle other than parity was outlined in the 1936 Act.

The Act defines five operating costs (labor, subsistence, maintenance, repairs, and insurance) which could be subsidized and "any other items of expense in which the Commission shall find and determine that the applicant is at a substantial disadvantage in competition. . . ." The Act also provides for countervailing subsidies to offset competing foreign subsidies, but no payments of this type have ever been made.

From the very nature of the parity principle it follows that the operating differential subsidy does not guarantee profits nor, for that matter, does it have anything to do with profits. It merely provides American-Foreign cost parity on certain major operating items. If, for example, the traffic department of an American shipping line should be less efficient than its foreign counterpart, the American operator would pay the penalty for his inefficiency. Presumably his vessels might operate with a seventy percent load factor as compared with, say, ninety percent for his foreign competitor and he would soon be in difficulties. Operating cost parity would be of no avail.

The Act provides an effective safeguard for the taxpayer in the event of conditions that would make for high profits without an operating subsidy. Fifty percent of profits in excess of ten percent on capital necessarily employed are recapturable up to the full extent of subsidy payments over a period of ten years or less, but in no case may the recaptures exceed the amount of the subsidy. It is estimated that fully sixty percent of the operating differential subsidy payments made since the effective date of the 1936 Act have been recaptured or are recapturable.

Failure to understand the parity principle clearly has led to recent proposals which are in conflict with law. These proposals hinge on the point that somehow gross operating differential subsidy payments should now be curtailed because the industry is currently operating at a favorable earnings rate. The statutory basis for the proposals is the ambiguous Section 606 (1) which provides changes in the amount of operating differential payments because of changes in items on which the contracts were based and "other conditions affecting shipping." It is abundantly clear from congressional discussions, however, that Congress never intended this ambiguous section to limit the rate of subsidy payment by current earnings considerations. Congress wisely employed the recapture provision, and only the recapture provision, to safeguard the interests of the American taxpayer in the event of big shipping profits.

How The Subsidy Works

The Act provides for long term contracts between the operators and the Maritime Commission not to exceed twenty years duration. It was found that in practice the original long-term contracts had to be amended frequently to meet new conditions in a troubled world. With the coming of war, the long-term contracts had to be suspended and they are now in the process of renegotiation. The original contracts have been modified by long series of addenda. The present practice is to add to a reinstated contract one more addendum which, in effect, may be virtually a new contract.

The essential feature of the contracts is the agreement of the operator to maintain a maximum-minimum schedule of

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'36 MERCHANT MARINE ACT

sailings on the trade route covered by the contract in return for the operating differential subsidy. But, in many other ways, the freedom of managerial decision is limited both by the provisions of law and the negotiated terms of the contract. Salaries and dividends are strictly limited. The operator's freedom and flexibility of trade is subject to the will of the Commission. He even trades away a major part of his own financial control. Small wonder then that certain operators are not anxious for a reinstatement of the operating differential contracts at this juncture when most or all of the subsidy payments would be recapturable.

The Division of Research of the Maritime Commission is responsible for calculating the subsidy rates to be paid on each trade route. On approval by the Commission these rates are applied against the audited voyage costs for voyages under the long term contracts. The law provides for prompt payment up to seventy-five percent of the subsidy and up to ninety percent before the final audit. The final audit may take years and, indeed, the Commission still owes the operators almost $1.0 million on pre-war voyages.

When the 1936 Act was in process of becoming law, many members of Congress questioned whether it would be possible for any American agency to determine foreign costs as a basis for parity rate payments. Events have proved that such scepticism was unwarranted. The Division of Research, under the direction of Colonel Hugh Butler, is making a scientifically exhaustive study of competing foreign costs. Since foreign wages and working conditions are a matter of public record and since the wage differential will represent the major part of the subsidy payment, a trained group of economists should be able to produce an accurate schedule of such parity rates.

The foregoing account implies the magnitude of the problem of subsidy payment resumption. Technically the subsidy payments were resumed on January 1, 1947, but the problem of agreeing to reinstated contracts, calculating the subsidy rates and working out a basis for actual payment may mean that no post-war subsidy payments will actually be made for many months to come.

How Much Will It Cost?

One guide to the future operating differential subsidy costs to the American taxpayer is the gross and net cost before the war. (See Figure 1) Proponents of American shipping like to compare these figures with the $67.7 million cheddar cheese subsidy over approximately the same period. It goes without saying that the pre-war level of payments would not be sufficient to satisfy parity requirements in the future. For one thing the area of subsidy payments has been expanded. Immediately before the war the number of actual subsidized voyages was at an annual rate of 750 but, in view of subsequent and pending extensions, the post-war *maximum* number may come close to 1500 voyages per annum. Furthermore, the post-war subsidy per voyage may approximate $30,000 as compared with the 1941 rate of $17,000.

Figure 1

Amount of Operating Subsidy

(In millions of dollars)

	Temporary Agreement	Long-Term Agreement	Total
1937	$3.3	$ —	$ 3.3
1938	3.8	7.4	11.2
1939	.4	11.7	12.1
1940	--	13.0	13.0
1941	—	11.0	11.0
1942	-	.7	.7
Total Accruals	7.5	43.8	51.3
Estimated Recaptures	1.5*	28.6	30.1
Net Subsidy	$6.0	$15.2	$21.2

*Actual recaptures

One frequently hears that the spread between foreign flag and American flag operating costs has narrowed because of the unsettling effects of the war. Food and ship stores cost approximately the same in U.S. ports as in foreign ports and, what is more, are more readily available in U.S. ports. Furthermore, repair possibilities in foreign yards are restricted by capacity limits and by the availability of American supplies. As an offset, however, the wages of American seamen have risen so rapidly that the wage differential of today is greater than the aggregate differential on all items before the war. In Figure 2 is shown the estimated differential of today on a C-3 ves-

(Continued on Page 54)

SHIPS AND CHEDDAR CHEESE

Subsidy payments to ship operators are in the form of operating differential subsidy aid to pay for the difference between the domestic and foreign costs of certain items of operating expenses. The construction differential subsidy is a payment made to American shipyards to pay for the difference between the domestic cost of construction and the cost of building a particular vessel to be operated on "an essential trade route" in a representative foreign shipbuilding center.

During the fiscal years 1934 through 1946, Federal subsidy payments to business and farmers totaled $13,610,900,000, according to Senate Document 13, 80th Congress. Of this total, only $297,000,000, or less than 3% (2.27%) was paid to the maritime industry in the form of operating and construction differential subsidy payments.

Payments made by the Department of Agriculture to farmers under the various AAA Programs for conservation of land resources or withdrawing land from cultivation totaled $7,603,400,000. Payments by the Commodity Credit Corporation for price support programs and direct subsidies, totaled $2,110,000,000. Payments by the Treasury Department for reduction in interest rates on farm mortgages totaled $334,200,000. Payments by the Reconstruction Finance Corporation for losses incurred in the purchase and sale of certain commodities at less than cost, or in direct subsidies to various processors totaled $3,266,700,000.

In order to be absolutely fair in comparing subsidy payments made by one agency as against another, the payments made by the Department of Agriculture are reduced by 7% to allow for certain administrative costs which ought not to be charged against the direct subsidy program, since the Maritime Commission figures do not include administrative costs.

The payments by the Department of Agriculture are the only payments which included any administrative costs and when these costs are deducted ($532,242) we find that the percentage of subsidy paid to operating subsidy and construction subsidy is only 2.27 per cent of the total amount paid. ($13,610,900,000-$532,212,000 or $13,078,658,000).

This adjusted total represents a payment to all business and agriculture of 43 times the amount paid in operating and construction differential subsidy for the period involved or 262 times the amount paid in operating subsidy and 51 times the amount paid in construction cost absorption.

The amount paid in operating differential subsidy aid ($48,700,000) is only .037% and the amount of construction differential subsidy aid and construction cost absorption ($248,300,000) is only 1.898% of the adjusted total subsidies paid.

It is interesting to compare the total costs of the operating differential subsidy program and the benefits the government derived therefrom with the amount of direct subsidies paid on certain individual items, i.e., subsidy payments to producers of cheddar cheese ($67,700,700) to producers of fruits for processing ($74,800,000) are both larger than the total cost of the operating differential subsidy aid program.

Payments to producers of dairy products were over four times the amount paid for both operating and construction differential subsidy aid. Payments to processors of flour were larger than the total paid to the maritime industry. Payments to producers of petroleum and petroleum products were considerably larger than those paid to the maritime industry, and subsidy payments to livestock producers

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were more than five times the amount paid in subsidy to the maritime industry.

It is interesting to note that for the $48,000,000 which the government paid in operating subsidy, American steamship companies made 3,842 voyages on essential trade routes and at the present time approximately $29,000,000 of this amount paid is already accrued for recapture and will be returned to the United States Treasury; for the $248,000,000 paid to shipyards, 289 vessels were built for American operators.

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NFAS: MORE LIBERAL APPLICATION OF '36 ACT

By FRAZER A. BAILEY
President National Federation Of American Shipping

Private American companies are not building passenger steamships due to the economics of the situation. The cost of building vessels of this type has increased by approximately 65 percent since 1941. The operating costs of passenger steamships have increased in even greater proportion than have those of cargo vessels, which since 1941 have increased between 75 and 100 percent. This is due to the larger crews necessarily carried on passenger vessels and demands from crews for improved accommodations which absorb the passenger-carrying capacities of vessels. Passenger steamships which travel at high speed are large consumers of fuel oil which has increased in price since 1941 by 133 percent. Not only does the expense side present a dismal picture, but with very high investment costs, a dislocation of the normal passenger travel pattern, and the unknown factor of overseas air transportation, American steamship companies engaged in rendering passenger service must deliberate carefully as to whether it is prudent to make such large investments at this time. A simple approach to the foregoing is that the economic picture, as it relates to U.S.-flag passenger service, must be improved to the extent necessary to justify a prudent businessman extending his investment in this field. The Federation's program, which will be presented later, will be designed to improve this economic picture to the extent necessary. It will probably provide the following for passenger-carrying and combination steamships in the foreign trade:

More Liberal Interpretation of Parity

(a) The present law provides that the government will pay the entire cost of all national defense features incorporated in such vessels with government approval. It may be necessary to amend the law to clearly specify that this provision is intended to cover cost of speed in excess of commercial requirements, and any other defense features which may be required by military authorities, and, in addition, other features which are not required on similar foreign vessels, such as excess crew accommodations, safety and fireproof features, marine inspection and sanitary requirements, etc. The shipowner to be compensated for any expense in connection with the loss of, or for providing additional ship space due to the inclusion of such features. The purpose would be to bring the investment cost of the American ship to a parity basis with competing foreign ships.

(b) That the construction differential subsidy provided by law should for a specified period of time be fixed at a definite figure of 50 percent of the cost of the vessel after deducting national defense and other features not required of foreign ships. The purpose of the construction differential is to maintain parity in the cost of such vessels as between American and foreign owners. At the present time it is not possible to compute a differential in construction costs due to disturbed conditions existing in foreign shipyards, including the purchase of American steel, machinery and auxiliaries, and the resulting abnormal foreign cost. We expect to propose that the Congress follow a precedent used during World War II, when the competitive position of foreign shipyards was unavailable, by setting the construction differential at a definite figure equal to the maximum now provided in the Act. It will be recalled that the fixing of such a fixed construction differential was recommended by the President's Advisory Committee on the Merchant Marine in its report of November 1947 (Page 9). This is not a definite departure from the principle of parity but is rather an expedient to permit the functioning of the law during a time when parity computation properly applicable to such vessels is not possible.

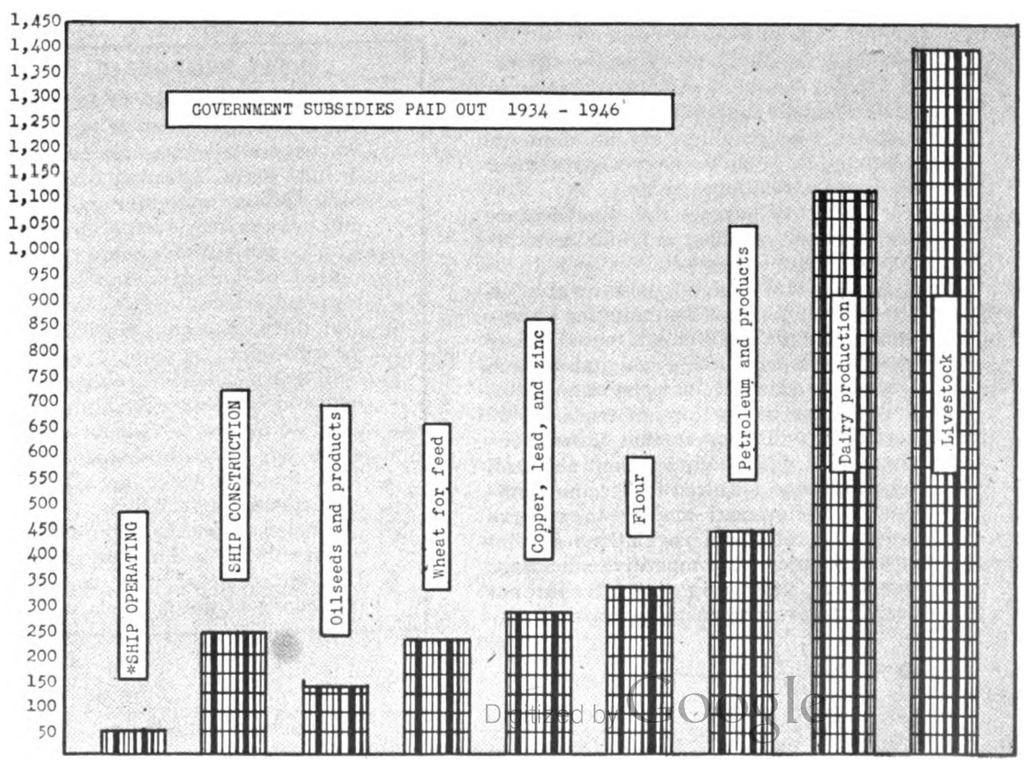
(c) That such vessels stand on their own individual financial responsibility, and not endanger the successful operation of cargo services and other ship operations of a particular shipowner. It is generally recognized that the financial operation of passenger steamships is hazardous. If the shipowner is willing to gamble a minimum of 25 percent of the value of the vessel, he should not be required to risk the remainder of his business to guarantee its obligations, but should be in a position where he can surrender the vessel and take the loss involved. This may be accomplished by having such vessels owned by separate corporation or corporations with limited liability, and with the mortgages and notes guaranteed only by such corporation. Necessarily, an operating differential subsidy agreement for a reasonable period must be simultaneously available.

Reduction of Interest Rates

(d) That the shipowner shall only be required to insure his equity in the vessel but shall cover full liability risks, the premium on which would be handled through the process of the operating differential subsidy.

(e) That inasmuch as the American-flag passenger business is on doubtful financial grounds, the government should be as liberal as possible in creating a favorable economic condition under which these ships may be built and operated, and that interest upon deferred payments be at the lowest reasonable rate, say 2 percent per annum.

(f) That should the government default in its obligations under such contracts through failure to appropriate funds



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'36 MERCHANT MARINE ACT

to make subsidy payments or otherwise, the shipowner, if he so elects, would be permitted to surrender his vessel and be entitled to full reimbursement for funds properly expended in carrying out his part of the contract.

(g) That inasmuch as the shipping business is one of cycles of good and poor earnings, the shipowner should be permitted to claim depreciation in any particular year, (or no depreciation as the case may be), according to the earnings of the particular period. This is what is known as accelerated depreciation and is a practice followed by a number of leading maritime nations. Under this system the owner can, of course, only obtain credit through depreciation for the return of capital actually invested. When this is exhausted no further credits can be claimed. The procedure we suggest enables the shipowner to write down his capital investment during periods of good earnings and not be required to take depreciation during years when no earnings are available, which in effect does not properly reflect true profits for tax purposes over the whole period.

Domestic Trades

For passenger and combination ships in the domestic trade, we expect to suggest in our program:

(a) That the construction differential be extended equal in all respects to that provided for similar vessels in the foreign trade. This is a departure from the parity principle as to these particular vessels inasmuch as no foreign flag competition exists in domestic trades. The basis for this recommendation is national defense. We believe the military authorities will confirm that it appears impossible to maintain in active operation in the foreign trade a sufficient number of passenger-carrying steamships to satisfy the military requirements for convertible troop ships in the event of an emergency. If this situation can be proven, then the most practical and economical means of meeting it is to provide economic aid for passenger-carrying vessels in the domestic trade.

(b) We will suggest the same separate financial responsibility of the domestic passenger ships as we have suggested for the foreign passenger ships.

(c) We will suggest the same feature of shipowner insuring only his own investment in these vessels.

(d) We will suggest as favorable an interest rate as possible in order to encourage the production and operation of these vessels by making it equal to such a reduced rate as may be applied to similar ships in the foreign trade.

(e) We will suggest that vessels receiving this type of government aid shall be allowed and required to become members of conferences and/or to observe conference rates and regulations so that they may enjoy no competitive advantage over other vessels in these trades not receiving government aid.

Cargo Ships—Foreign and Domestic

(a) We expect to recommend similar treatment with regard to a construction differential. We recognize that the government is the owner of a large number of cargo vessels. However, it may be possible in either or both domestic and foreign trades to build certain special-type ships for particular services, and there should be provided a means by which a gradual replacement program will be initiated in the near future. Unless this is done, the American Merchant Marine will suffer from the fact that inasmuch as a large majority of its vessels were built at a particular time, their normal life usage will also expire together.

(b) We expect to ask re-examination of the interest rate on deferred payments to a more favorable level than the 3½ percent now in effect.

(c) We expect to ask similar treatment with respect to shipowner insuring only his equity in particular vessels where construction differentials are applicable.

(d) We expect to propose that a system of accelerated depreciation to which we have already referred with respect to passenger ships should be applicable to cargo vessels in both the foreign and domestic trades. The cycles of good and poor earnings are equally applicable to cargo vessels. Shipowner should be entitled to recover his full investment as a return of capital against earnings when these are available. This does not result from a straight-line depreciation rate under which the depreciation credit is lost in those years in which there are no profits against which they may be charged.

American-Flag Tramp Operations

In dealing with cargo ships we have not touched upon the subject of government aid for *American-flag tramp operations*. This is a very live subject and is receiving serious study and consideration by member companies of the Federation. Very frankly, we have not reached a point in our deliberations which will enable us to make a definite statement at this time. We are continuing these studies and we hope to have something constructive to suggest when our program is completed.

There are a number of subjects which have general application to ships of various types in various trades. Among these which we expect to bring forward in our complete program are:

(a) The matter of legislation which will require the Interstate Commerce Commission not to permit discriminatory or non-compensatory rates by other carriers on goods which are susceptible of transportation by water carrier. This is a subject which we believe essential to the restoration of the domestic coastwise and intercoastal services which has in the past been equal to between one-third and one-half of the total American Merchant Marine and has supplied the readily available units in home waters for national defense in periods of emergency.

(b) We expect to suggest clarification and liberalizing of the trade-in provisions of the 1936 Act in order to furnish incentive for a replacement program for reasons which we have already mentioned.

Reduction in Panama Canal Tolls

(c) We expect to call attention to the fact that since the opening of the Panama Canal, transit tolls from shipping plus tolls forgiven on U. S. Government vessels have exceeded the operating cost of the Canal for transit purposes and all construction and improvement costs of the Canal by approximately two million dollars. Our computation is based upon there being no charge for interest on the government funds used for construction and improvement—such interest being a proper charge against national defense. We expect to emphasize the fact that the Canal was not built exclusively for commercial purposes, but that national defense was an important consideration at the time of its authorization and that it has made a very large contribution to national defense according to our military authorities. We will not propose any burden upon the taxpayers of the United States in the future commercial operation of the Panama Canal; but inasmuch as the money advanced by the government has now been repaid upon this basis, we expect to propose that the future operation of the Canal be borne from tolls collected from all vessels furnished transit under a tariff of tolls designed to completely defray these expenses without deficit and without profit.

Private Ownership and Operation

The industry members of the Federation stand strongly for private ownership and private operation. They recognize, as has the Congress, that government aid is necessary under certain conditions to meet foreign competition and the requirements of national defense in order to maintain in active operation, together with trained crews, etc., such merchant vessels. It is a matter of national policy that the U. S. shall possess

NFAS PROPOSALS

1. Extend provisions of '36 Act providing for payment of subsidy for national defense features to include extra operating costs for high speeds, reduction in capacity caused by large power plants, loss of revenue space caused by enlarged crew quarters, etc.
2. Flat fifty-percent construction differential.
3. Set apart financial obligations incurred in passenger ship operation so as not to risk an operator's dry cargo business.
4. That the shipowner be allowed accelerated depreciation.
5. Extension of construction differential subsidy to domestic trades.
6. Liberalization of the trade-in provisions of the '36 Act.

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a merchant marine adequate for these purposes. We offer no alternative to the present government policy of private ownership and operation, supported by government aid where necessary as provided in the existing statutes. What we are suggesting is that where the existing statutes do not provide sufficient aid to create an economic condition justifying private interests to build and operate ships found necessary in the public interests, these statutes should be carefully reviewed for the purpose of ascertaining what, if any, amendments or changes are necessary or desirable to accomplish this objective.

* * *

WATERMAN: CONSTRUCTION SUBSIDY WITH NO STRINGS

By W. B. GARNER
Executive Vice President
Waterman Steamship Corp.

There is no doubt that our government wants and expects to adopt a long-range program looking toward the development and maintenance of an adequate merchant marine *under private ownership and operation,* as contemplated by the 1936 and 1946 Acts, and to have available at all times an adequate shipbuilding industry and merchant marine for the benefit of our peace-time economy, and to meet urgent needs arising during periods of national emergency, and that the vessels should be constructed in American yards by American labor and material. In order to achieve this objective, it is my firm conviction that the 1936 Act should be amended to permit the granting of a construction differential subsidy on all such vessels of the type, size and speed approved by the Maritime Commission, and of not less than 2,000 gross tons each. The operation of such vessels *should not be restricted* by the provisions of the construction differential subsidy agreement. The construction subsidy is intended to equalize the difference in the high cost of building the vessel in American yards as against the much lower cost of construction in foreign yards, and accrues solely to the benefit of American labor but not to either the owner of the shipyard or the vessel so constructed. *Operating* restrictions upon such vessels *should stem solely from operating differential subsidy contracts* if and when entered into between the Commission and the owner, pursuant to which an operating subsidy would be paid to the owner by the government in the operation of the vessel. In other words, it is proper that the operation of the vessel should be restricted in specified trade routes approved by the Commission *only* when the operation thereof is subsidized by the government.

Accelerated Depreciation

There are sound reasons, in my judgment, justifying the conclusion that the owner of an American-flag vessel should be permitted to depreciate the cost thereof on an accelerated basis, and within a much shorter period of time than presently permitted by the Bureau of Internal Revenue. Some of the foreign nations permit their shipowners to depreciate their vessels as rapidly as the owner may elect from the standpoint of his annual earnings. This privilege would give the owner an opportunity to depreciate the cost of his vessel more rapidly during prosperous years, and aid materially in stabilizing his capital structure during years of lean earnings and operating losses. It so happens that the bill, H.R. 5887, introduced by Congressman Hale on March 17, 1948, and which was referred to the Committee on Ways and Means, provides that any citizen of the United States who owns, in whole or in part, any vessel of not less than 2,000 gross tons, documented under the laws of the United States, *and operated without the aid of an operating differential subsidy,* may amortize the cost of such vessel in such manner as he deems appropriate, and for the purposes of federal income and excess profits taxes, shall be entitled in each taxable year, beginning after December 1, 1945, to a deduction of the portion of the cost so amortized in such taxable year.

WATERMAN PROPOSALS

1. The 1936 Merchant Marine Act should be amended to provide construction differential subsidy for *all* U.S.-flag ships without operating restrictions.
2. Accelerated depreciation should be permitted for all ship-owners *except* those operating under subsidy contracts.
3. Tax benefits offered to the subsidized operators should either be abolished or made available to unsubsidized operators.

The shipowner cannot amortize any part of the cost of the vessel during years of operating losses as he would have no tax liability except during years when earnings are realized. After the cost of the vessel has been fully amortized, there would be nothing more to depreciate, and no further deduction from that source for the purpose of income tax. Thereafter, the entire earnings from the operation of the vessel would be taxable, and the owner would have to pay the full amount of tax thereon.

The very fact that this suggested privilege is already available to various foreign-flag owners, in my judgment, affords another sound and compelling reason why it should be made available to American-flag owners within the shortest possible time.

Tax Discrimination

Another point which I bring to your attention is the most unjust discrimination now existing as between subsidized and non-subsidized operators with respect to income tax liability. Section 607 (h) of the 1936 Act, as amended, reads as follows:

> "The earnings of any contractor receiving an operating-differential subsidy under authority of this Act, which are deposited in the contractor's reserve funds as provided in this section, except earnings withdrawn from the special reserve funds and paid into the contractor's general funds or distributed as dividends or bonuses as provided in paragraph 4 of sub-section (c) of this section, shall be exempt from all federal taxes. Earnings withdrawn from such special reserve funds shall be taxable as if earned during the year of withdrawal from such funds."

From the above quoted provision of the 1936 Act, it is clearly shown that the earnings of an operator receiving an operating differential subsidy may be deposited in his special reserve fund as required by the terms of his operating subsidy agreement and that all such earnings, when so deposited, shall be *exempt from all federal taxes.* I am not suggesting that the subsidized operators should be denied this tax exemption privilege, but I do remind you that it creates a most unjust discrimination against operators who operate without the aid of government funds. I urge that this tax discrimination should be eliminated within the shortest possible time by such action as the Congress may deem appropriate. I do suggest, however, that if it is fair and reasonable for the subsidized operators to receive such tax benefit, the same treatment should be accorded to the non-subsidized operators.

In this connection, I call your particular attention to the fact that the Report of the President's Advisory Committee on the Merchant Marine points out the disparity in treatment under the Merchant Marine Act, 1936, insofar as taxation and the accumulation of reserve funds are concerned, as between subsidized and non-subsidized operators. The said Committee recommends that non-subsidized operators be permitted to voluntarily enter into agreements with the Maritime Commission to establish reserve funds under the provisions of Section 607 of the 1936 Act, which is now applicable only to subsidized companies. The Committee stated that such action would remove a disparity in tax treatment against non-subsidized operators and facilitate their accumulation of reserves, and that it would put all companies engaged in foreign trade on the same basis, except with respect to direct operating subsidy payments.

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PROPELLER CLUB CONFERENCE MIDDLE ATLANTIC REGION

Acclaimed As One Of Best Industry Conferences Ever Held

The Propeller Club Spring Conference —Middle Atlantic Region, sponsored by the Propeller Club Ports of Norfolk and Newport News, and held at Old Point Comfort in Tidewater Virginia, has been hailed as one of the best industry conferences held in recent years.

The Conference officially opened Friday morning, April 2, with a panel meeting. At the morning session a paper was presented for T. H. Bossert, president of New York Shipbuilding Corporation by L. R. Sanford, executive vice president of the Shipbuilders Council of America; and Frazer A. Bailey, president of the National Federation of American Shipping. The theme for the entire Conference was "The Report of the President's Advisory Committee on the Merchant Marine and Legislation Incident Thereto." Chairman of the morning session was W. E. Blewett, Jr.

At the afternoon panel Vice Admiral William Ward Smith, Maritime Commission chairman, presented the Commission's official views of the Report, disagreeing heartily with the Committee's recommendations for complete reorganization of the Maritime Commission, and a few other minor points, but on the whole enthusiastically indorsing the Report.

Congressman Hugh A. Meade of Maryland, speaking on the subject of the Advisory Committee Report, indicated that the House Merchant Marine and Fisheries Committee, of which he is a member, would proceed with extreme caution in tampering with the Merchant Marine Act of 1936. Congressman Meade did, however, urge an immediate shipbuilding program to keep the shipyards busy and supply badly needed passenger tonnage.

Samuel D. Schell, vice president of the National Federation of American Shipping presided at the afternoon panel.

Speaking at the banquet in the "Virginia Room" of the Hotel Chamberlin, Honorable Schuyler Otis Bland, Member of Congress from Virginia, received a tremendous ovation, the audience rising unanimously as "the Judge" was introduced by toastmaster Vice Admiral E. L. Cochrane. Following Judge Bland, Congressman W. W. Bradley of California spoke at length on the serious situation in which the American Merchant Marine now finds itself and suggesting self-help as a partial cure for many present-day ills.

The banquet was followed by a dance in the "Virginia Room."

Early Saturday morning the majority of those at the Conference embarked on the Old Bay Line steamer for a tour of the Hampton Roads area. Threading through the busy roadstead, past the Navy Aircraft Carrier SAIPAN, light cruisers and attack transports, and scores of merchant ships, the steamer passed the Naval Operating Base, Norfolk & Western Coal Piers, Welding Shipyard, Norfolk Shipyard, Norfolk Naval Shipyard, Newport News Shipbuilding & Dry Dock Company, Chesapeake & Ohio piers, and back to the dock at Old Point Comfort.

The final afternoon of the Conference was devoted to various activities including a golf tournament at the James River Country Club, a tour of the Newport News Shipbuilding and Dry Dock Company yards, and a visit to the historic Mariners' Museum, endowed by Collis P. Huntington, founder of the Newport News shipyard.

During the Conference the women carried on parallel activities, visting Williamsburg on Friday, attending the banquet and dance Friday night, going on the steamer tour Saturday morning, and the shipyard and Mariners' Museum tour in the afternoon. During the golf tournament the ladies held a bridge tournament at the Country Club.

PROPELLER CLUB PORTS participating in the Spring Conference—Middle Atlantic Region, were Ports of Baltimore, Norfolk, Newport News, New York, Washington, D.C., and Yonkers. The Conference was sponsored by the Ports of Newport News and Norfolk.

Pictured below at the luncheon are, left to right, (top row) HARMON LEWIS, President of the Propeller Club Port of New York, and retired President of the Alcoa Steamship Company; BENJAMIN F. CULLISON, President, Propeller Club Port of Baltimore, retired from The Texas Company; R. S. OSBORNE, President, Propeller Club Port of Norfolk; LEWIS D. PARMELEE, National President, Propeller Club of the United States, and President of AGWILINES; W. E. BLEWETT, JR., National Vice President of the Propeller Club, and Executive Vice President of the Newport News Shipbuilding & Dry Dock Company.

Bottom row, seated left to right, are W. E. BLEWETT, JR.; J. B. WOODWARD, President of the Newport News Shipbuilding & Dry Dock Company; HAROLD J. HARDING, National Secretary and Treasurer of the Propeller Club; E. R. HATTEN; President, Propeller Club Port of Newport News; SAMUEL D. SCHELL, President, Propeller Club Port of Washington, D.C. and Vice President of the National Federation of American Shipping; and ARTHUR SANTOS, President, Propeller Club Port of Yonkers.

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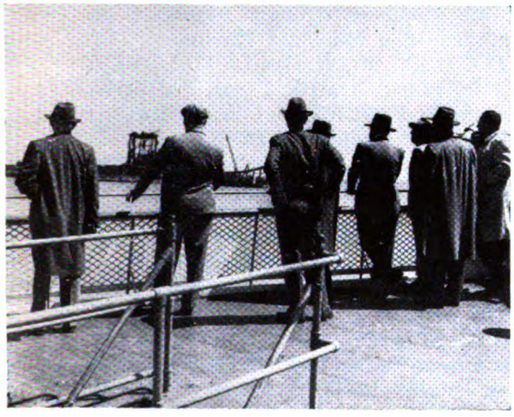
HONORABLE SCHUYLER OTIS BLAND, Member of Congress from Virginia, former Chairman of the Committee on Merchant Marine and Fisheries of the House and present minority leader in the Committee, received a tremendous ovation from his enthusiastic audience, many of them his constituents.

VICE ADMIRAL E. L. COCHRANE, USN (ret.), a member of the President's Advisory Committee on the Merchant Marine, head of the department of naval architecture and marine engineering at the Massachusetts Institute of Technology, and National President of the Society of Naval Architects and Marine Engineers, acting as Master of Ceremonies at the Propeller Club Banquet.

CONGRESSMAN WILLIS W. BRADLEY of California, a me
ber of the House Merchant Marine and Fisheries Committ
addressing Propeller Club members and their guests at t
Friday night banquet.

STEAMER TOUR of the Hampton Roads area on an Old Bay Line steamer afforded an opportunity for inspecting Naval and commercial installations ashore. In the background of the cut is the Newport News Shipbuilding & Dry Dock yards.



GOLF TOURNAMENT—While others toured the shipyards and the Mariners' Museum, many took advantage of the excellent golf course at the James River Country Club for an afternoon of golfing. Here a foursome is holing out on the eighteenth.

SHIPYARD TOUR of the Newport News Shipbuilding a
Dry Dock Company on Saturday afternoon was a comple
inspection of the yards facilities. Here the guests are
specting one of the large graving docks. The tour start
with the Company's new hospital, went through the ent
yard, sheet metal and machine shops, and ended with
inspection of the Apprentice School for training new sh
yard workers.

J. B. WOODWARD, President, Newport News Shipbuilding & Dry Dock Company, addressing the luncheon meeting and welcoming guests to the Spring Conference, Middle Atlantic Region of the Propeller Club.

W. E. BLEWETT, JR., Executive Vice President of the Newport News Shipbuilding & Dry Dock Company, and National Vice President of the Propeller Club, conducting the morning panel.

ADMIRAL W. W. SMITH, Chairman of the Maritime Commission, speaking before the afternoon panel.

FRAZER A. BAILEY, President of the Nation
Federation of American Shipping, addressi
the morning panel.

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WASHINGTON

By The LOG's Own Correspondent

LOG Reveals Shipbuilding Program

In a special bulletin issued March 25, The LOG was the first by a week to reveal the passenger ship and tanker construction program subsequently submitted to the House Committee on Merchant Marine and Fisheries by Secretary of the Navy John L. Sullivan.

The recommendations, resulting from a closed Cabinet meeting attended by Secretary of Defense Forrestal, Secretary of Commerce Harriman, Secretary of the Treasury Snyder, Secretary of Interior Krug, Secretary of State Marshall, and Grenville Conway, Administration shipping advisor, contemplate the construction of fifty high-speed passenger ships and 170 tankers.

President Truman will send the Congress a revised budget request for ship construction for fiscal 1949 which will hike the present request of $29,500,000 up to $100,000,000. Of this amount, $90,000,000 will be earmarked for the new construction program.

Estimating the world shortage of tankers by 1951 will be 520, Sullivan said the tanker building program required of the United States to overcome its portion of the shortage would be 170 tankers.

Truman Hikes Panama Canal Tolls at Suggestion of House

President Truman last month lost little time in capitalizing upon the report of the House Appropriations Committee recommending pushing the Panama Canal tolls to the legal limit. The Committee also suggested that proper action be taken to lift the legal limit, presently set at $1.00 per ton. The toll rise will not become effective until next October 1st, and it is the intention of the shipping industry not only to get the rise set aside by that time, but to request that tolls be reduced. (For complete analysis of the Panama Canal situation see The LOG for July 1947, p.36, "Who Pays for the Panama Canal").

Frazer A. Bailey, president of the National Federation of American Shipping, appearing before the Senate Appropriations Subcommittee having jurisdiction over the Canal, urged that the Senate group incorporate into its report information reversing the suggestion of the House Committee.

Mr. Bailey stated before the Senate Committee: "In 1946 the Canal showed a profit of $722,196.87; 1947 the Canal showed a profit of $820,389.83. Every indication points to the probability that the Canal for the fiscal year ending June 30, 1949 can easily pay all of its operating expenses out of its revenues at present rates of toll."

Referring to a study of the Canal's financial background made by the Federation, the accuracy of which was conceded by the War Department, Mr. Bailey said: "Since the opening of the Canal, transit tolls from shipping, plus tolls forgiven on U.S. Government vessels, has exceeded the operating costs of the Canal for transit purposes, and all construction and improvement cost of the Canal by approximately two-million dollars. Our computation is based upon there being no charge for interest on the government funds used for construction and improvement, such interest being a proper charge against the national defense."

Overtime on Overtime Bill Revamped

The Goodwin Bill on overtime-on-overtime has been revised under the same title and number. In its amended form it will preserve the principles of the original draft for protection of industry but, it is believed, the bill will be more acceptable to Congress in its revised status.

An omnibus labor bill has been introduced in the Senate by Senator Joseph H. Ball (S. 2386) which will take care of the Senate side of the overtime-on-overtime problem. In addition, the Ball Bill offers other amendments to the Fair Labor Standards Act and also deals with minimum wages.

In introducing his bill in the Senate, the following statement was made by Senator Ball:

"The bill clarifies the Act to meet the problem of 'overtime-on-overtime'. It defines regular rate of pay in such a way as to prevent the pyramiding of true overtime payments, but requires production bonuses, shift differentials, and similar premiums to be included in the regular rate of pay unless otherwise provided by a collective bargaining agreement. The bill gives management and labor unions wider power to define the 'regular rate of pay' by collective bargaining. In addition, the definition of regular rate of pay removes complications in setting up profit-sharing plans, thereby encouraging their establishment.

"Another change in the overtime provisions gives greater flexibility to the exemption for employees who receive a guaranteed annual wage, thereby encouraging the spread of such plans."

Windup on the ERP Debate

The "big bill" providing billions in foreign aid was finally brought forth from Congress with a minimum of labor pains but not without plenty of sounding-off from the floor of both Houses.

The final version of the ERP which was signed by the President was emasculated of the State Department's untiring efforts to strip the American Merchant Marine of five-hundred ships. However, State was in there pitching until the very last minute, and it was a merchant marine-minded Congress which threw the ship-transfer provisions out of the House version of the bill by the whopping majority of 165 to 32.

Congressman Colmer (Mississippi) introduced the amendment which struck out that section of the bill authorizing the Administrator, with the approval of the President, to charter ships to the 16 participating countries.

Congressman Bradley (California) introduced the amendment which struck out the words "a substantial portion" and substituted in lieu thereof the words "at least 50 per centum" referring the cargoes to be carried in U.S.-flag bottoms.

This section, as amended, reads:

"The Administrator, shall, in providing for the procurement of commodities under authority of this title, take such steps as may be necessary to procure, so far as it is practicable that at least fifty per centum of the gross tonnage of commodities, procured within the United States out of funds made available under this title and transported abroad on dry-cargo ocean vessels, is so transported on United States flag vessels to the extent such vessels are available at market rates."

In the debate on the House floor on March 30, leading to the adoption of the Colmer and Bradley amendments, the following members strongly supported an American-flag Merchant Marine:

COLMER, Mississippi; MALONEY, Pennsylvania; COMBS, Texas; FALLOW, Maryland; JACKSON, Washington; BRADLEY, California; BOGGS, Louisiana; LATHAM, New York; PRESTON, Georgia; MEADE, Maryland; HALE, Maine; BONNER, North Carolina; MILLER, Connecticut; SEELY-BROWN, Connecticut; DOMENGEAUX, Louisiana; ANGELL, Oregon; HAVENNER, California; BLAND, Virginia; THOMPSON, Texas; NORTON, New Jersey; WELCH, California; THOMAS, Texas; BUCK, New York; RIVERS, South Carolina; HAND, New Jersey; WOLVERTON, New Jersey; and SASSCER, Maryland. Representatives JOHNSON, California; TOLLEFSON, Washington; and GEARHART, California, requested permission to insert remarks in the record.

Speaking loudly *against* an American-flag Merchant Marine were Representative VORYS, Ohio; SMITH, Wisconsin, and MUNDT, South Dakota.

Chairman Weichel did not vote.

Amendment of 1916 Would Spike "Discrimination" By Nationalized Fleets

Recent ruling by the Argentine Government, in addition to past actions by Columbia and Mexico, have prompted introduction of an identical bill to amend the Shipping Act of 1916. The bills were introduced by Congressmen Latham of

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New York and Bland of Virginia.

The bills would amend Section 26 of the Act to provide that the Maritime Commission, whenever a complaint of discrimination by foreign governments is filed with it, shall be duty-bound to investigate the complaint and report the results of the investigation to the President with its recommendations. The President would be authorized and empowered to take diplomatic steps to assure equal privileges for U.S.-flag ships engaged in trade with the discriminating government. If the President is not successful in securing equal privileges through diplomatic action, he would then advise the Secretary of the Treasury and the Secretary shall then refuse the right of entry into U.S. ports to ships documented under the laws of such government until the President advises him equal rights and privileges have been accorded. (For a full discussion of this problem see The LOG for November, 1947, p.34, "Is the Colombian Affair Only the Beginning?").

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Two Bills Introduced Call for Survey Of San Francisco Bay

Two Resolutions introduced in the House, one by Representative Anderson (California) and the other by Representative Welch (California) call for a survey of San Francisco Bay to determine the feasibility of conserving fresh water.

Representative Anderson's bill (H. Res. 515) would direct the Secretary of the Army to cause a preliminary survey and examination to be made of San Francisco Bay and connection waters to determine the need for constructing a dam or system of dams across the Bay in the interests of national defense and other purposes, including the dams proposed in the Reber Plan.

Representative Welch's resolution (H. Res. 503) would authorize studies by a joint board of Army, Navy, and Reclamation engineers to investigate and report on the feasibility of constructing a dam at the northerly end of San Francisco Bay in the vicinity of Mare Island, with adequate locks for navigation, for the purpose of separating at that point the salt water from the Pacific Ocean and the fresh water from the San Joaquin and Sacramento Rivers.

Both resolutions have been referred to the House Committee on Public Works.

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Maritime Commission Gets Deficiency Appropriations From Congress

The deficiency appropriations, reported out of the House Appropriation Committee by Congressman Taber (N.Y.), were as follows:

(1) *Personal services:* Amounts now available to USMC for personal services shall be available for additional temporary personal services in amount not exceeding $259,000 from May 1 to June 30, 1948.

(2) *Maritime Training:* Increases amount available in Independent Offices Appropriation Act, 1948, for (a) administrative expenses in this connection from $250,000 to $300,000 and (b) transfers to appropriations of Public Health Service from $64,000 to $82,900.

(3) *War Shipping Administration Functions:* Makes available until June 30, 1948, for carrying out vessel operating functions extended by Public Law 423, approved February 27, 1948, sum of $4,650,000 of the operating receipts made available by Second Supplemental Appropriation Act, 1948, and continued available by Urgent Deficiency Appropriation Act, 1948, for salaries and general administrative expenses. The limitation on use of operating receipts by USMC for cost of placing vessels in reserve fleet would be increased from $6,103,000 to $6,903,000.

(4) *WSA Liquidation:* Continues available until June 30, 1948 the appropriation to Secretary of Treasury in Second Supplemental Appropriation Act, 1948, for liquidation of obligations found by General Accounting Office to have been properly incurred against WSA prior to January 1, 1947, provided that hereafter all monies accruing to USMC from operation under WSA revolving fund prior to September 1, 1946, shall be turned into Treasury as miscellaneous receipts.

(5) *Vessel Operating Functions:* Authorizes use by USMC of amount not exceeding $17,600,000 from receipts of vessel operating functions, which were extended to March 1, 1949 by Public Law 423, until end of present fiscal year, provided that the unobligated balance as of June 30, 1948 shall be deposited into Treasury as miscellaneous receipts.

Reconversion Unemployment Benefits for Seamen: The bill would appropriate to the Social Security Administration an additional $840,000 for the foregoing purpose.

Maintenance and Improvement of Existing River and Harbor Works: The bill would appropriate an additional $1,865,000 to the Corps of Engineers, Department of the Army, for the foregoing purpose.

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Sanford Testifies Before House Merchant Marine Committee

There is "great danger" that some of the country's old established shipyards will be forced to shut down for lack of orders for merchant ship construction, the House Merchant Marine Committee was told.

The statement was made by L. R. Sanford, executive vice president of the Shipbuilders Council of America and former Director of Construction for the U.S. Maritime Commission. The Merchant Marine Committee is conducting hearings into the "state" of the merchant marine and shipbuilding industries with a view to determining whether new legislation should be recommended.

"The loss of any old established shipyards would be a blow to national security," Sanford said. He reported that at present there are only 30,000 employees engaged in new merchant ship construction in this country, the lowest figure since before the first World War. He pointed out that total employment was around 100,000 but that some 75,000 of these were engaged in ship reconversion and repair operations, which do not require the broad and diversified technical skills needed in event of another emergency ship construction program. In addition the ship reconversion work is a temporary postwar condition which will soon have been completed.

"The greatest danger at the present time is the loss of skilled and experienced personnel," Sanford said. "The technical staffs, responsible for the design of ships, are rapidly being dispersed, as well as the skilled craftsmen in the construction organizations. These skills are a valuable national asset, vital to national security."

Sanford said that despite the fact government and private funds are available for the construction of seven passenger liners, no action has been taken by the government to start the program. Only one passenger vessel, the PRESIDENT WILSON, is under construction in this country and it will be completed in a matter of weeks. Meanwhile, he said, there are only 42 passenger vessels of combination-passenger cargo ships in active service now remaining from the nation's prewar passenger fleet of 113 ships in active service at the time of Pearl Harbor.

Sanford referred the Committee to the report of the President's Advisory Committee on the Merchant Marine which recommended the construction of 46 new passenger vessels over the period of the next six years. "Action on this report is of the utmost importance," he said.

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NFAS Report Gives Current Status of Merchant Marine

A report prepared by Lawrence A. Oosterhous, Director of Research for the National Federation of American Shipping, gives the current status of the United States Merchant Marine and U.S.-flag participation in foreign trade.

The report is as follows:

The U.S. flag merchant fleet as of March 1, 1948 totaled 3,615 vessels of 1,000 gross tons and over. Of this number, 2,089 vessels were in active operation as follows: Privately owned U.S. flag fleet, 1,007; government owned vessels under bareboat charter, 1,018; government owned passenger vessels: under special bareboat, 5, Panama RR vessels, 2; government owned vessels under G. A. A., 57. Vessels inactive totaled 1,526 including privately owned U.S. flag vessels, temporarily inactive, 65; vessels under G. A. A. inactive, 142; and vessels in the reserve fleet, 1,318; Panama RR vessels, temporarily inactive, 1.

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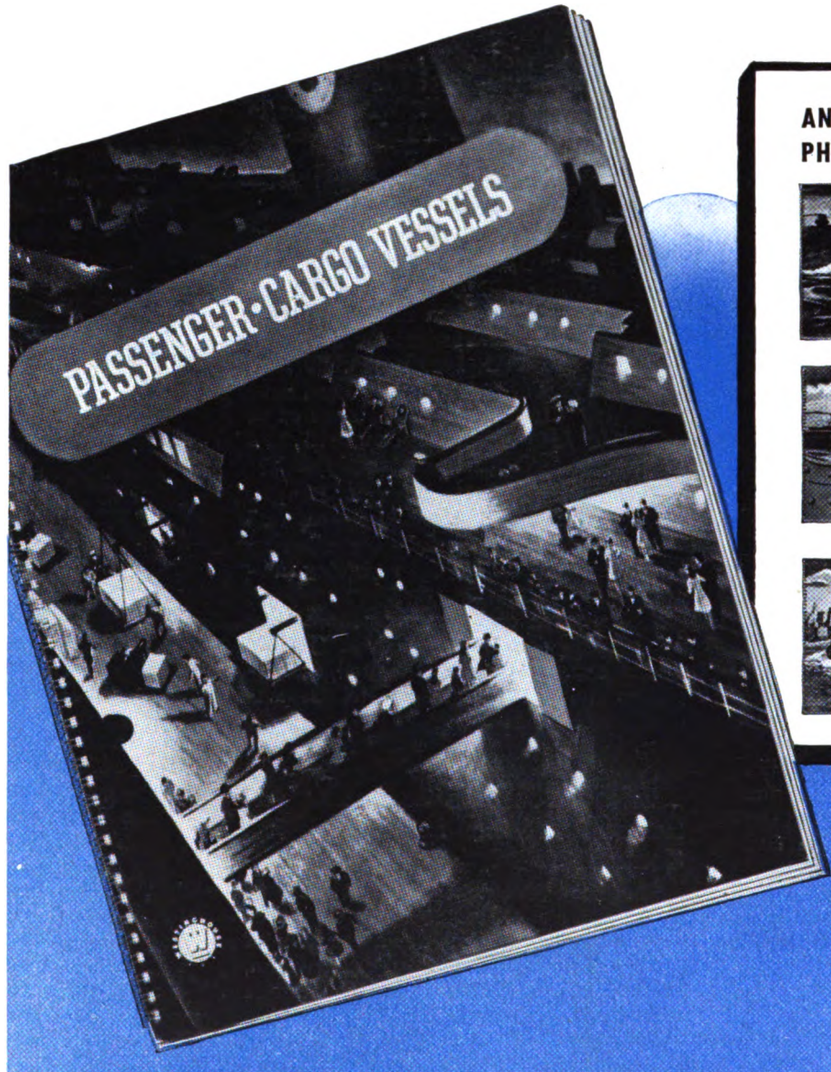

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1 PORT ENGINEERS IN ELEVEN MAJOR PORTS . . . experienced, trained counsel (at the ports listed below) to help you expedite inspection, engineering and repairs.

2 SKILLED STEAM AND ELECTRICAL SERVICE ENGINEERS . . . convenient to any port, to handle repairs or supervision of repairs on shipboard.

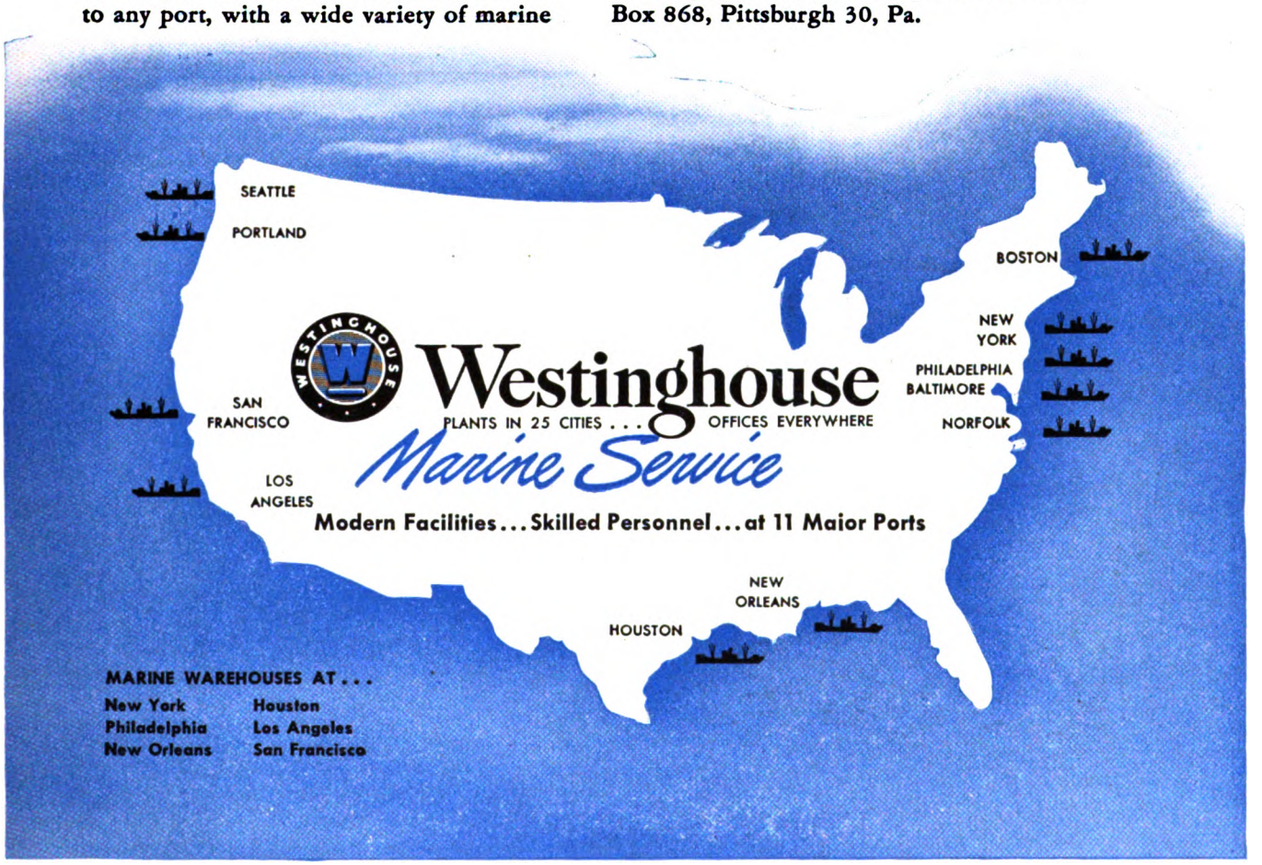
3 SIX MARINE WAREHOUSES . . . convenient to any port, with a wide variety of marine repair parts to help speed "turn around" in port.

4 SIXTEEN REPAIR SHOPS . . . near every U. S. salt water or fresh water port, for quick, complete, long lasting repairs on all types of marine equipment.

5 UNIT EXCHANGE STOCKS . . . emergency exchange service on a-c motors . . . d-c motors and generator armatures. Units are new or rebuilt and fully guaranteed.

6 SHIP SURVEYS AND INSPECTION . . . a service provided on a "spot" or periodic basis to check condition of all steam and electrical equipment, recommend necessary adjustments and maintenance, and to locate potential troubles before they develop.

For help on any marine equipment problem, call your Westinghouse Port Engineer. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.



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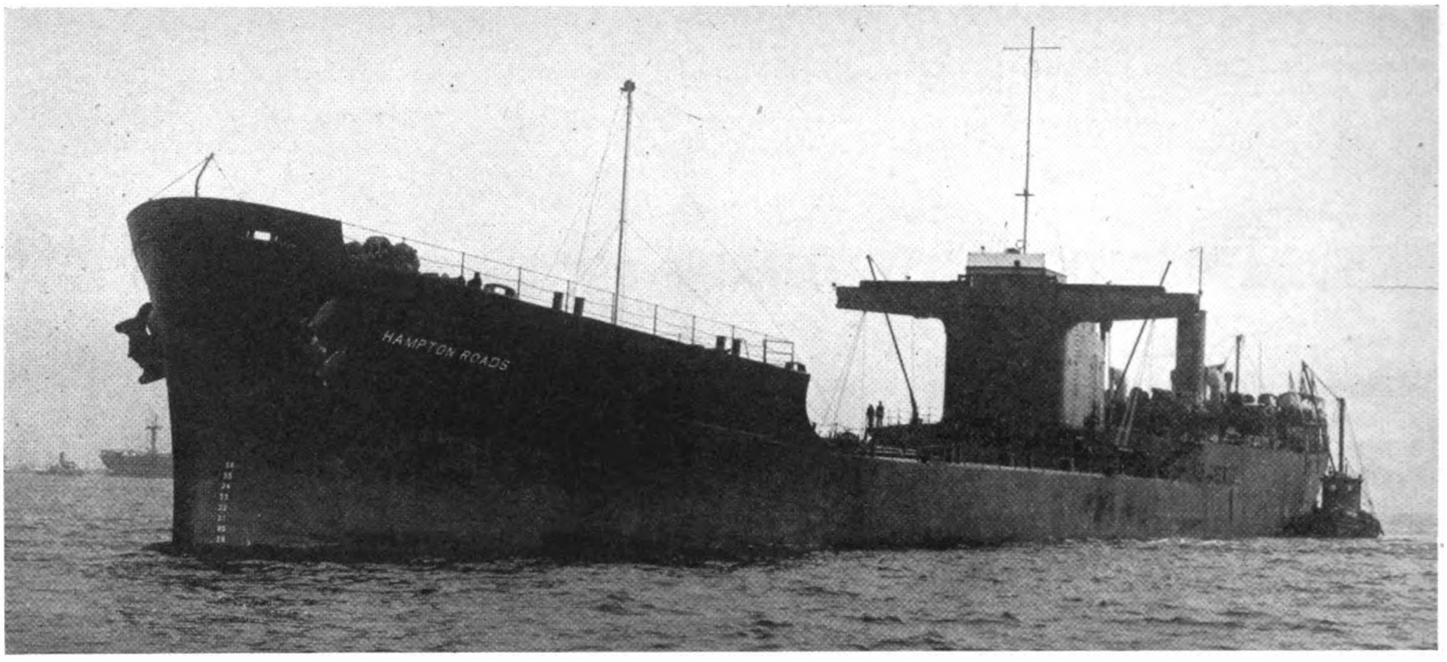

HAMPTON ROADS . . . a 24,000 deadweight ton tanker under charter to Socony-Vacuum Oil Company, Inc. shown here arriving at Port Socony, Staten Island, with a cargo of 7,335,720 gallons of East Texas crude for the company's refineries in the New York area.

DESIGN PROBLEMS OF A MODERN OIL TANKER

Here's what it takes to design the most important transportation unit in the world.

Part II

Part I of this article ran in the April Issue of The LOG

Welding and Riveting

In the construction of ships in the U. S. A. the trend has been to employ electric welding to the greatest extent possible because of the factors of weight saving, less time required for construction and reduced cost. Abroad the tendency has been to adhere to riveted construction to a much greater degree.

In the U. S. A., the welded ship was born in the late thirties; thus it is still somewhat of an infant as regards development time in the history of shipbuilding, and it still has some growing pains. We have gained experience during the years with riveted construction by experiment and by observation of ships in service and it is only logical to expect that we will learn in a similar manner about welded vessels.

The timetable for producing ships during the war was made possible by welding. The volume of ship construction during this period was unprecedented, and involved the employment of preponderance of inexperienced labor, yet the percentage of marine casualties directly attributable to welded construction is small compared with the number of ships built. Many welded vessels withstood the ordeal of enemy action during World War II, making port with gaping holes and vital portions of their structures torn away. The damages were localized to the area of the explosion and were expeditiously repaired by welding, to return the ship to active duty. Those vessels are conclusive evidence of the worth of welded construction. Under similar conditions, riveted ships would have opened seams for quite a distance from the damage resulting in the probable loss of the ship. In cases of grounding or collision, the damages sustained by welded ships are likewise confined to the local area of the accident. The author believes in the future of the all-welded ship. Important factors that must be considered in any successful welded vessel are: (a) The elimination of hard spots and stress raisers from the design; (b) The maintenance of a proper welding sequence during construction; (c) The thorough inspection of all important welds by experienced and conscientious inspectors. Structural discontinuities in longitudinal members should be faired in to provide a smooth flow of stress. The connections of brackets to more flexible members should be carefully designed to prevent local working at the toe. On the construction side, groove preparation, correction of excessive root opening, back chipping and methods of starting and finishing welds should be closely checked. Weld quality should be checked by taking trepanning plugs as required, or by gamma ray inspection.

The present tendency to introduce several riveted longitudinal joints into the welded structure at shell and deck stems from that idea that a riveted joint has enough slip to take sudden load concentration created by heavy rolling and pitching of the vessel, also that in the event of the development of an incipient crack in the monolithic structure its continuance is stopped at the riveted joint. The straps may prove effective, and apparently it is on the safe side to employ them. Experimental research and experience must point the way for future design developments, particularly as regards the evaluation of the effects of multi-axial stress and constraint, plastic flow, notch sensitive steels, low temperatures, etc.

The sagging condition for the loaded tanker is productive of the highest bending moment and may be approximately evaluated by the formula:

Bending Moment (Ft. Tons) = Displacement × Length B.P./K, where K varies between the limits of 36 to 40.

The deck structure is subjected to severe compressive stresses in this condition and the strakes of plating at the centerline, over the longitudinal bulkheads, and the stringers should be made continuous and somewhat heavier in order to safely carry

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the loads imposed.

To determine stress distributions and efficiency of the hull girder, full scale hogging and sagging tests have been conducted on the welded tankers "Shiloh" (U.S.M.C. T-2 type) in the U. S. A. and the "Neverita" (12,000 DWT. Tons) in Great Britain. The loadings imposed were of greater severity than those occasioned by considering the ship on a wave of height 1/20 the length of the ship, and the stresses produced no resultant permanent deformations, fractures, or other structural failures. The computed moments and observed stresses were in such agreement as to show that the ship girder performs as an elastic structure according to the flexure theory, and that all longitudinal continuous material may be considered as effective.

Three systems of hull framing are presently employed in tanker design, viz: longitudinal, transverse and a combination system using longitudinals on the bottom shell and deck with transverse framing for the wing tank portions.

Longitudinal System

The longitudinal system is most commonly used in this country. Continuity of longitudinals at the oil-tight bulkheads is usually maintained by through brackets. The span of the longitudinals is limited by practical considerations to a maximum of 12'-0" by equidistantly spaced deep transverse web frames. The webs are trussed in the wing tanks, and are two or three in number, depending upon the length of the tank. At the ends of the vessel a gradual transition should be made from longitudinal to transverse framing, where the latter system is generally used because of much ship form. An overlapping or scarphing of the framing should be incorporated in the structural design. The spacing of transverse bulkheads has gradually increased, so that cargo tanks are now about 40'-0" long. This is approved by the classification societies providing the structure is so designed as to withstand the dynamic stresses set up by the surging fluids in the tanks.

The design of transverse and longitudinal bulkheads in the cargo space employs either corrugated plates or the plate and stiffener type of construction. The corrugated construction, some forms of which are patented, results in a bulkhead of lighter weight for equivalent strength.

Because of the corrosion factor the thickness of the upper strakes of bulkhead plating should be increased above strength requirements, in accordance with classification society recommendations.

The majority of modern tankers have two longitudinal bulkheads in way of the cargo oil space, dividing the hull transversely into a center tank portion flanked by wing tanks. This arrangement enables a more efficient distribution to be made of the material entering into the hull girder, simplifies piping arrangements, and facilitates loading and ballasting the ship. The longitudinal bulkheads are usually spaced a distance apart equal to about one half the beam of the ship.

Cofferdams located at both ends of the cargo oil space are required by the classification societies. They should not be less than 3'-6" long in order to provide practical working clearances.

There are arguments pro and con for the location of cargo pump room amidships or aft. The amidship pump room serves as a cofferdam, between the forward and after sets of tanks and facilitates the transportation of two grades of oil in one shipment. The center of gravity of the cargo is located further aft with this arrangement; therefore the center of buoyancy must move aft, resulting in a more favorable distribution of displacement. The longitudinal bending moment in the hull is reduced in the sagging condition with the pump room amidships.

The location of the pump room aft eliminates the need, at least in part, for the after cofferdam with the consequent gain in cargo cubic and saving in weight of one bulkhead. The pump room can be reduced in size because the prime movers for the cargo pumps can be located in the engine room, the shafts being fitted with stuffing boxes in the way of the bulkhead. As a result of trim, cargo drainage to pumps by gravity may also be cited as an advantage, together with shortened lengths of steam piping to pumps.

Accommodations

The hull structure in way of the ends of deck erections, including shell, upper deck and fashion plates, requires additional strengthening because of high localized stresses in both hog and sag conditions, and the welding requires extra attention.

Excessive streamlining of deck house structures is uncalled for. A pleasing appearance combined with appropriateness of purpose can be attained without going to extremes. The "Chinese Wall" effect at bridge and poop fronts can be eliminated by slightly curving them in plan, and by logically stepping back the houses at each level. The bridge erection should be arranged to straddle two sets of cargo tanks so that cargo hatches will be clear of the enclosure. Because of reduced freeboards, the elevated fore and aft walkway between erections is a rule requirement.

The use of light weight alloys has not been presently applied to tanker deck house construction. Although there is a saving in weight amounting to about 28%, the cost is more than doubled. The weight of house structure that might be adaptable to this construction would be approximately 120 tons on a 500 foot Ship.

The tanker is at sea about 300 days per year; accordingly the standard for living accommodations should be above average in order to reduce the turnover of personnel. Typical gross spacial allowances for licensed personnel are about 90 square feet per man; for crew members about 55 square feet. Many owners favor individual staterooms and bath for officers, and one or two person staterooms for crew members. There is an increasing tendency to provide recreation rooms for officers and crew. Bulkheads in way of accommodations are of light steel or metal clad asbestos board construction; fitted with hollow metal doors. The furniture is usually of metal construction. The trend in heating and ventilation for accommodations on tankers is to install warm air systems, utilizing the ventilation air for the heating medium, and providing about a five minute air change.

Pump room ventilation is an essential requirement, and commonly consists of a liberal natural supply combined with a mechanical exhaust system. The exhaust duct take-offs are located about 18 inches above the bilges and maintain an average air change of about five minutes. Fan motors must be spark-proof and must not be located in the pump room or air stream. Fan impellers should be made of brass or aluminum.

Hull Fittings

The mooring fittings, scuppers, deck fittings, etc. are usually weldments or steel castings and should be of simple and rugged design. Rail stanchions should have an ample cross section to withstand bending due to nominal shock loads and heavy seas, and valve stems projecting above the weather deck should be protected by suitable deck stands. Where there is any danger of creating a spark in the presence of explosive vapors by steel striking on steel, one of the parts involved should be made of a brass composition.

Hatch openings in the upper deck should be cut in the lighter strakes of plating, and the center tank hatches should be staggered with respect to the pairs of wing tank hatches so that in the transverse plane a minimum of area is removed from the deck section. The hatches have circular steel coamings, welded 3 feet or 4 feet diameter, 30 inches high; fitted with hinged flat steel covers or dished heads made oil tight at the joint by heavy flax or neoprene gaskets retained in a steel channel. The covers are made fast by several dogged bolts or by a strongback locking bar spanning the diameter, and are fitted with ullage covers with spark screens. The covers are raised mechanically by a lever arm, pivoting about the hinge pins as a fulcrum and actuated by a screw and nut device. Some of the companies have used cast aluminum alloy hatch covers that can be handled manually. An idea that has been propounded, and has merit, is the fitting of a second and somewhat smaller hatch in each cargo tank for the purpose of providing cross ventilation.

Tank ladders should be of rugged design, fitted with a platform at half depth in deep vessels, and provided with hand rails of solid cross section.

In each tank, cofferdam, etc. a bleeder plug, preferably of stainless steel, should be fitted so that the compartment can be drained when the vessel is in dry dock. The use of brass plugs in tankers en-

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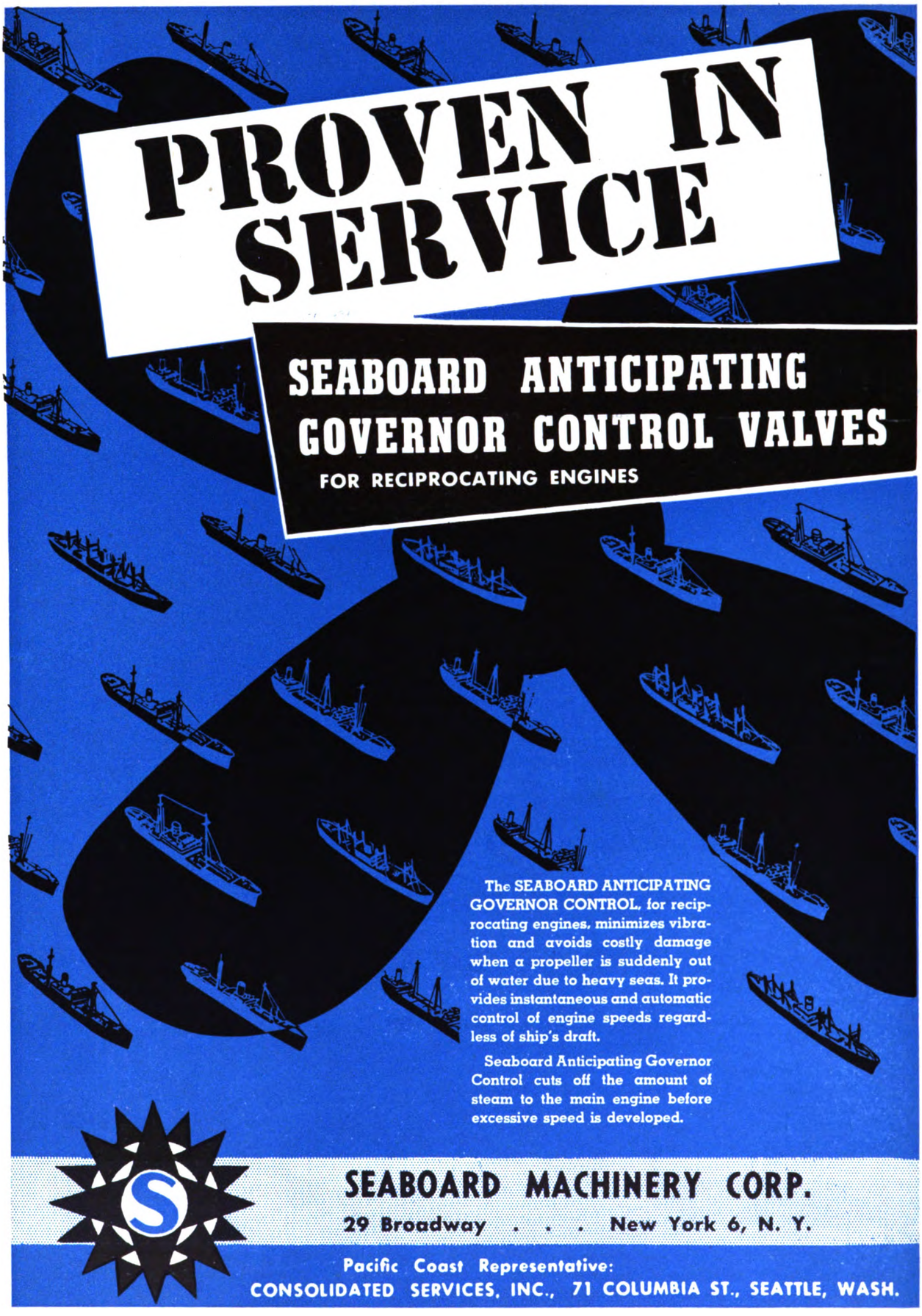

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gaged in the gasoline trade is not recommended because the threads become corrosively worn away.

The cargo loading and discharge nozzles are usually amidships and suitable derricks should be adjacently located for handling the oil hose. Two 2 ton booms should be stepped on each kingpost so that the hose may be suspended in a bridle arrangement over the side. The running rigging should consist of manila rope and wooden blocks to eliminate the spark hazard.

Propulsion Machinery

The selection of the power plant for a tanker design is predicated upon several factors, viz: owners preference, reliability and simplicity, cost and ease of repairs and maintenance, economy of operation, weight and space requirements and capital investment. Each factor must be considered and its importance analyzed from the standpoint of making the vessel an economical carrier for the entire period of its life expectancy. In the last analysis the effect of all combined factors in reducing the cost of transporting the cargo in cents per barrel governs the choice.

A brief analysis of these factors seems in order. Owners preference may be based upon a satisfactory experience with a certain type of prime mover and that he desires to maintain similar units in his fleet for transfer of parts and personnel. Reliability and simplicity are considered as they affect design, materials and construction, assurance of maintaining schedules and absence of mechanical failures at sea. The tanker, because of its short turn-around period, has no time for extensive repairs and maintenance. Economy of operation presently stresses fuel economy as the major factor, but lube oils, etc. must be considered. The weight element is reflected in a loss or gain of deadweight, and similarly space requirements affect cubic available for cargo. An expensive machinery installation may be the cheapest, providing that a low fuel economy is realized and that low repair and maintenance costs are effected.

Types of Power Plants

Types of tanker power plants presently installed include: geared steam turbines, turbo-electric, direct Diesel, geared Diesel and Diesel electric. The first three embrace the great majority of tanker installations. Gas turbine installations, although promising in regard to fuel and weight economies are still in the experimental stage of development, and nuclear power is the germ of an idea for the future. The trend in the U. S. A. has been to favor the steam propulsion plant installations, whereas in Europe the internal combustion engines have taken the lead. In the U. S. A. the majority of shipyards purchase the propulsion machinery from a sub-contractor and install it in the vessel. From the angle of installation costs there is little to favor either the steam or the Diesel job. As regards operation and maintenance there is a relative parity between the turbine plant and Diesel plant.

The cross compound turbine plant, using double reduction gears has the advantages of light weight combined with flexibility of arrangement and low spacial requirements. It has steam in abundance for pumping cargo, steaming out tanks, etc. The present practice favors steam conditions at 450 P.S.I., 750° F. total temperature, but the trend is definitely upward. The main steam piping installations have usually been of carbon steel for the above steam conditions; for steam at temperatures of 750° F. to 900° F. carbon-moly pipe has been used; and above this the practice seems to indicate chrome-moly pipe as required. In a comparison of weights with a Diesel installation, the feed water and greater amount of fuel required must be taken into account.

The turbo-electric installation was brought to the fore by the manufacturing exigencies created by World War II. It is a reliable power plant, possesses great flexibility for maneuvering and can easily meet large steam and electric port requirements. The source of power is alternating current supplied at 2400 volts to the propulsion motor, 440 volts to auxiliary motors and 115 volts for lighting. As compared with the geared turbine job there are slight increases in fuel consumption, plant weight and cost.

The direct Diesel installation has a higher plant weight due to two factors, viz: increased weight of propulsion machinery and weight of boilers required for cargo use. This is more than offset by the weight savings effected by greater fuel economy, reduced water requirements and the ability to carry a greater cargo deadweight. With only normal care the maintenance costs are comparable. The present trend toward higher propeller speeds reflects an advantage to the Diesel plant because lighter and smaller engines can be used to develop the same power.

Maximum Power Requirements

The present maximum power requirements for modern tankers are under 15,000 S.H.P. The power plant is usually designed as a single screw installation as this arrangement combines advantages of minimum plant weight and spacial requirements together with highest propulsive efficiency. Auxiliaries driven by electric motors generally use direct current, 230 volts, but there are some A.C. installations. The lighting circuits usually operate at 115 volts.

Table IV has been prepared on a percentage basis for comparison of a geared turbine plant (450 P.S.I.—750° F.) and a direct Diesel plant for a 500 foot tanker, developing 6000 S.H.P. at about 95 R.P.M., cruising radius of 10,000 nautical miles. The relative fuel economies for all purposes have been assumed as follows:
Geared turbine plant....0.59 lbs./SHP hr.
Direct Diesel Plant.....0.38 lbs./SHP hr.

Cargo Pumps and Piping

One of the most important features in a tanker is its cargo pumps and piping.

Table IV

	Geared Turbine	Direct Diesel
Hull & Outfit	20.1%	20.1%
Propulsion Machinery	3.0%	4.6%
Fuel	4.9%	3.2%
Fresh Water, Stores, Crew	1.4%	0.6%
Cargo	70.6%	71.5%

Where a vessel can dock or leave without restriction, the turn around period is fixed by the time required to discharge the cargo; assuming that all ships business can be transacted in this time. Therefore, it is an asset to handle the cargo as rapidly as possible. For economical operation of the vessel, the type of pumping equipment should be complementary to the propulsion machinery installed. The determination of pump capacities and pipe sizes is often influenced by the owners shore facilities, and in many cases the discharge rate of the tanker installation is greatly in excess of the dock systems to which they are connected. The time interval for handling a full cargo varies from ten to twenty hours. The discharge pressures from 90 P.S.I. to 125 P.S.I.

The location of the cargo pump room has been previously discussed. The present trend in the selection of pumping machinery is to use centrifugal pumps for the main units, and rotary or reciprocating steam pumps for the strippers. The main pumps are usually driven by steam turbines or electric motors. With the midship pump room arrangement, the electric motors are mounted vertically in a separate gastight enclosure on the Upper Deck in order to minimize the spark hazard. The motors are usually of the totally enclosed type. With the pump room located aft, the motors or turbines can be located in the propulsion machinery space, driving the pumps which are located in the pump room by means of horizontal shafting through the bulkhead. Totally enclosed waterproof motors are normally used in this case. Variable speed controls are installed in both cases.

Cargo Lines

The cargo lines are usually standard black steel pipe, maximum diameter 14 inches, with welded flanges. The joints are made up with trunk board gaskets and are bolted. Bulkhead connections are weldments consisting of short lengths of extra heavy pipe penetrating through the bulkhead and welded to it, with flanges welded at both ends. Expansion in each line is taken up by some form of patented or stuffing box coupling or expansion bend. If a relief valve is fitted on the discharge side of the cargo pump the valves and other fittings may be of cast iron, otherwise the U. S. Coast Guard Regulations require that they be of cast steel. Suction castings are made of cast iron. The tank valves are commonly gate valves, brass mounted, fitted with non-rising bronze spindles. Valve operating rods should be of cold rolled steel, have greater strength than the valve stem, in straight vertical leads if pos-

(Continued on Page 42)

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U.S. Lines Announces Plans For New Superliner

Plans for construction of the largest, fastest and safest passenger liner ever built in the United States have been completed by United States Lines and turned over to the U.S. Maritime Commission technical staff for study. (See page 26 for close-up photograph.)

The ship, designed for the highly competitive North Atlantic service, will be about 48,000 gross tons, between 900 and 1000 feet long and have accommodations for 2000 passengers and a crew of 1000. She will have a speed of at least 28½ knots, enabling her to maintain sailings every two weeks from New York. Estimated cost of the vessel is about 65 million dollars.

Designs were drawn by the naval architectural firm of Gibbs & Cox, designers of U. S. Lines' ss AMERICA, largest ship in the American Merchant Marine.

Completely air-conditioned throughout, the giant vessel will have space for 48,000 cubic feet of refrigerated cargo, and 100,000 cubic feet for dry cargo and passenger automobiles. She has been designed to meet the highest standards of the United States Coast Guard and will be built to the highest class of the American Bureau of Shipping. She will incorporate the remarkable advances made in this country during the last ten years in machinery and hull design. Propulsion will be by steam machinery of the highest pressure type, in which Gibbs & Cox the designers have specialized for many years. The engines are reported to be capable of developing 100,000 SHP and to occupy much less space than the engines of the AMERICA.

Shortly after the close of the war, the Maritime Commission and officials of United States Lines discussed plans for rehabilitation of the Company's North Atlantic passenger service. The company undertook to have plans drawn for an outstanding express passenger liner, and commissioned Gibbs & Cox to proceed with the designs. The company has spent about a quarter of a million dollars on the plans.

Although designed primarily for commercial service, the liner would also be readily adaptable for troop transport service in event of a national emergency. National defense features will include the highest standard of fire resistance, high speed, large troop carrying capacity, with a long range cruising ratio.

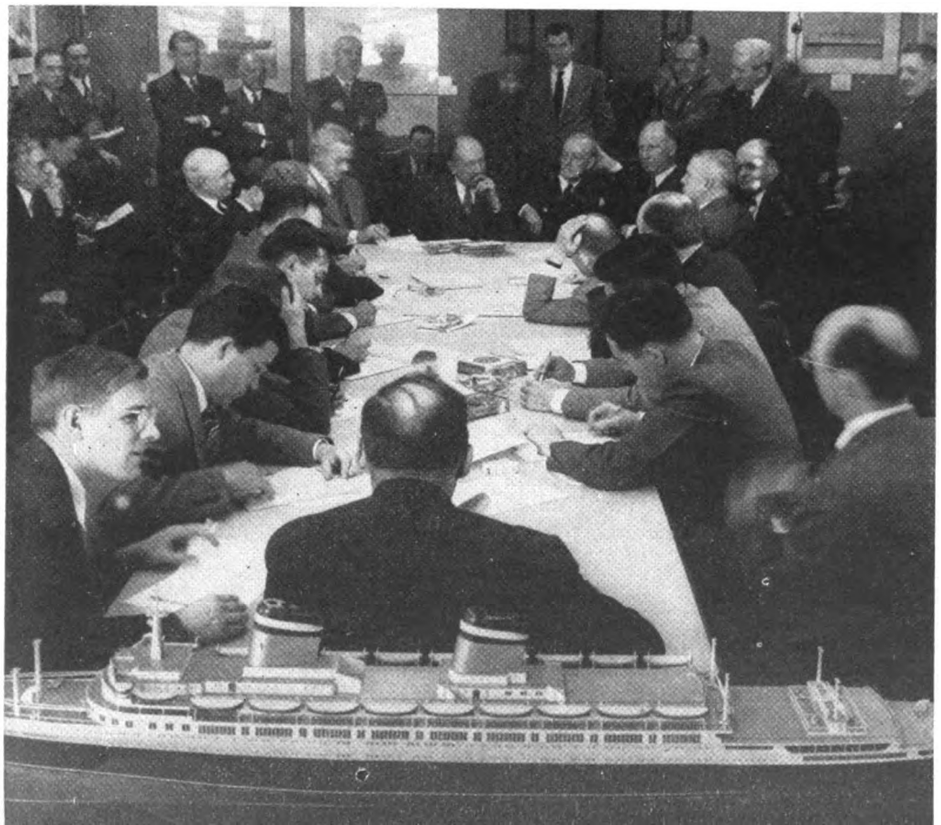
She would carry 12,000 troops, as compared with 8000 on the AMERICA.

Plans of the new liner were announced at a press conference attended by Vice Admiral W. W. Smith, chairman of the Maritime Commission; Raymond McKeough, vice chairman; Commissioner Joseph A. Carson, Jr.; General Franklin, president of U. S. Lines; Colonel Raymond Hicks, executive vice president of United States Lines; officials of Gibbs & Cox; and a six-man technical staff from the Maritime Commission.

The Maritime Commission was greatly pleased with the results achieved and with the fact that the plans are so complete that they can be sent out for bids promptly, and the building of the ship can commence with a minimum of delay.

The designs will be studied for about six weeks by the Commission's technical staff. If approved, the Commission will ask Congress for a special appropriation for construction of the ship. Should Congress appropriate funds, the Commission will advertise for bids from shipyards. The ship would take approximately 30 months to complete.

NORTH ATLANTIC SUPERLINER was announced by the United States Lines at a press conference in Manhattan at which were present Vice Admiral W. W. SMITH, Chairman of the Maritime Commission; WILLIAM F. GIBBS, of Gibbs & Cox, designers of the ship; and JOHN M. FRANKLIN, President, United States Lines. Model of the proposed vessel is in foreground of cut. (See page 26 for other cut.)



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Tanker Design

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sible, be fitted with a universal joint in the line and be rigidly braced at frequent intervals. Each rod should pass through a stuffing box at the deck over which is mounted a fabricated steel deck stand fitted with open and shut indicator.

The arrangement of cargo piping is dictated by the trade requirements of the owner. A tanker carrying a straight cargo requires a simpler system than one that transports many grades. In any case, cross over connections should be provided so that cargo may be handled by any line in any tank, and that simultaneous pumping can take place with at least two grades of cargo. A preliminary piping arrangement should be prepared in the early design stages to insure clearances of bulkhead stiffeners, webs, etc. Suction is facilitated by having the pumps and suction lines as close to the bottom of the vessel as is practicable. Main suction lines are usually laid at the level of the top of transverse floors in the tanks and stripper lines are reeved through the floors in way of manhole openings. Stripper lines are usually 4 inch or 6 inch standard steel pipe.

The main loading and discharge connections are usually located on the Upper Deck, about amidships, Port and Starboard; in addition some vessels are fitted with a cargo line over the stern. Hose connections should be arranged several feet inboard of the rail to provide a working clearance for handling oil hose.

Tank venting and vacuum relief systems should be fitted in accordance with the requirements of the U. S. Coast Guard and other regulatory bodies.

Reducing Explosion Hazards

To satisfactorily pump cargoes of heavy oil, it is necessary to preheat the oil by means of heater coils in the tanks. Heater coils add weight, increase cost, complicate tank cleaning and cause trouble through freezing and bursting; therefore are not recommended as a routine installation for all tankers. The coils should be installed at a level of about 6 inches above the bottom of the tank, and proportioned at the rate of about one square foot of heating surface to 125 cubic feet of tank volume. Steam is usually supplied at 125 P.S.I. The coils, consisting of 1-½ inch extra heavy seamless pipe, are fabricated by welding.

The hazard of an explosion resulting from the ignition of hydrocarbon vapors can be minimized by the installation of an inert gas system that blankets the tanks with CO_2, eliminating support of combustion thereby. The CO_2 is extracted from the flue gases in the boiler uptakes, passed through a scrubber and cooler, and pumped into the tanks while the cargo is being discharged. In the

(Continued on Page 52)

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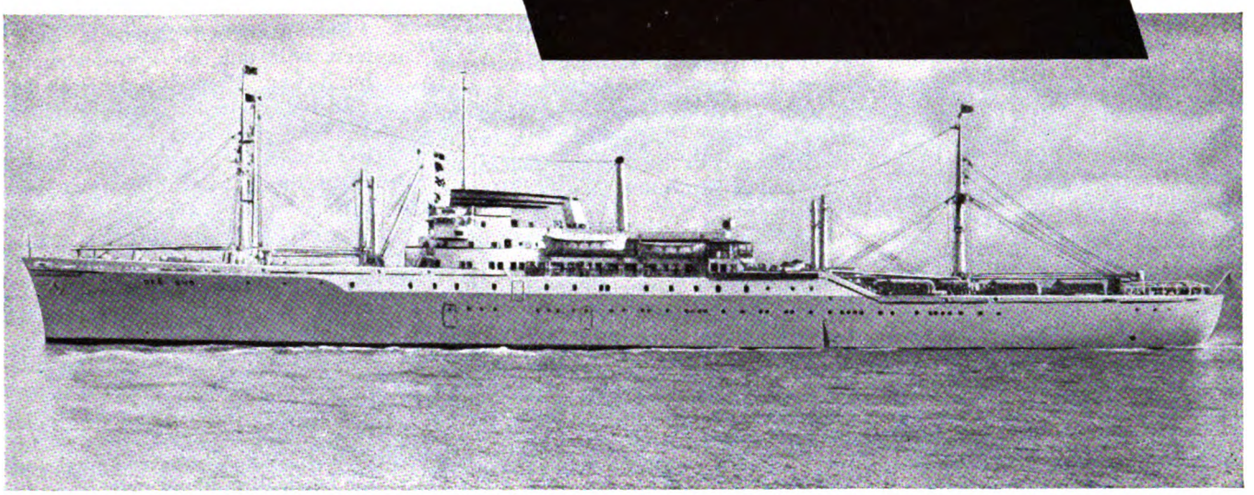
DELTA LINE

MISSISSIPPI SHIPPING COMPANY

Luxury Liner

"DEL SUD"

MODERN PAINTS PROTECT & BEAUTIFY A MODERN LINER



The smart Dining Salon of the DEL SUD is decorated with "INTERLUX", *almost indestructible*. These beautiful marine paints are available in a wide range of tints.

This modern liner is completely painted inside and out with International Heavy Duty Marine Coatings. The decision to use them was made after carefully weighing several factors: initial price, low maintenance cost due to the unusual durability of these fine paints, and fuel economy that always results when 'SUPERTROP' Antifouling bottom paint is used. As a part of their service to customers, International maintains stocks of paints in every port at which the vessel calls so that she may be repainted with the same coatings at any time, anywhere.

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AGENTS IN EVERY IMPORTANT PORT

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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

LA Port Engineers Plan Dinner Dance

Todd Shipyards Corp., Los Angeles Division, sponsored the dinner at the April meeting of The Society of Port Engineers Los Angeles. The group gathered, as usual, at the Hotel Lafayette, Long Beach.

Following dinner, business discussion replaced the usual monthly educational feature. Various organizational matters were debated and final vote was taken in favor of holding the group's first informal dinner dance at the Biltmore Hotel, Los Angeles, Friday, April 30.

The May 5 meeting tentatively has scheduled a metallurgist as the educational feature.

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San Francisco Engineers Guests of George Swett

Members of The Society of Port Engineers, San Francisco, were the guests of George E. Swett & Company at their April meeting, which was held at the Swett offices and attended by approximately 70 persons. A cocktail hour and buffet dinner preceded the program, which was featured by a discussion of soot blowers by Robert Dill, who handles the Diamond Power Specialty line of blowers for the Swett organization.

Marshall T. J. Garlinger, United States Army Transport Corps, chairman of the society's program committee, announced Ets-Hokin & Galvan, San Francisco marine electricians, would sponsor the May 5th meeting. This firm will present a double program, one part being a C-O-Two Fire Equipment Company picture titled "Fire and Ice" and the second part a motion picture story of the General Electric Company's Electronic Navigator with a radar discussion by C. T. Haist, Jr., district representative at San Francisco for the marine and aviation division of the General Electric electronics department. Ets-Hokin & Galvan represent both the C-O-Two company and the General Electric electronics department. The meeting will be held at Simpson's Restaurant at Ninth and Clement Streets, San Francisco.

Mr. Garlinger announced other future meetings as follows:

June—Bailey Meter Company will present pictures and a talk on combustion control boards.

July—George Barr and Hugh Ogilvie of General Electric will conduct a discussion of steam and electricity aboard vessels.

August—Chemists of the International Paint Company will talk about application of bottom paint.

Future meetings, not yet scheduled, include these programs:

Sperry Gyroscope Company engineers will tell what the chief engineer should know about the stability of his vessel.

R. W. Boettiger, sales manager of the Leslie Company, Lyndhurst, N. J., will discuss reducing valves.

John Kooistra of the Carrier Corporation, will present a program on marine refrigeration.

Gisholt Company engineers will talk on dynamic balancing.

Merrill J. Gigy, representative at San Francisco for the Lake Shore Engineering Company of Iron Mountain, Michigan, will talk about that firm's alternating current cargo Magi winch and present pictures.

E. F. Griep of the Standard Oil Company will present a paper on marine lubrication.

Westinghouse Electric Corporation engineers will give a program, the details of which have not been yet worked out.

San Francisco Magnetic Laboratories men will talk on non-destructive tests by X-Ray, Magniflux or Probolog.

In his discussion at the April meeting, Mr. Dill said soot blowers aboard ship were called upon to withstand continuously the hardest of service conditions. Elements and bearings, he declared, were exposed to high furnace temperatures without the cooling effect obtained by boiler and super-heater tubes, which always are filled with water or steam to carry away the heat.

"The highest engineering standards are employed in the design and construction of Diamond soot blowers," he said. "Research has developed the use of special metals such as Calorized steel and Dialoy for fabricating blower elements and bearings. Every detail of application and erection is planned with extreme care and, as a result, the blowers are reasonably free from care. To keep them so is primarily a matter of careful attention.

"Each time a boiler equipped with Diamond soot blowers is taken out of service, the equipment should be checked carefully to see that the bearings are tight, that the nozzles register correctly with the boiler tubes, that the elements are in good condition and straight and that the blowing ranges are correct.

"All boiler tubes and headers near the soot blower elements should be examined by rubbing the hand over them to determine whether or not there are any grooves or flat spots which indicate impingement. If the cause of any impingement is not apparent and can be corrected, the Swett service department will be glad to give its help."

PRESIDENT JOE L. WOSSER (center), of the Society of Port Engineers, Los Angeles, greets April 7 dinner sponsors, a group of four from Todd Shipyards Corp., Los Angeles Division. The four are, left to right: J. A. MacINTOSH, Assistant General Manager; JOHN MATHEWS, Chief Estimator; JOHN T. GILBRIDE, General Manager; and ROLF MONSEN, Southern California Sales Representative.

SAN FRANCISCO PORT ENGINEERS MEET AT GEORGE SWETT COMPANY OFFICES. Here are members of the Swett staff, together with PHIL THEARLE, United States Army Transport Corps, president of the San Francisco Society, and MARSHALL T. J. GARLINGER, also of the Army Transport, chairman of the program committee. Left to right: FRANK SLOMAN, JOHN MARSH, A. L. ADKINS, MR. THEARLE, R. W. LONG, L. A. STONE, GEORGE E. SWETT, HENRY BUFFALOW, BOB DILL, MR. GARLINGER, JOHN KEESLING, M. W. FAWCETT, HOWARD BAILEY, HENRY WICKERT, BILL RICHARDS, JIM SWETT and WALTER KEATES.

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Morrell Discusses Tanker Program for N.Y. Engineers

Appearing at the March 24 meeting of the Society of Marine Port Engineers, New York, Inc., Robert W. Morrell, prominent New York tanker consultant, discussed the new tankers under construction at the Bethlehem Sparrows Point yard, the Sun Shipbuilding and Dry Dock Company in Chester, Pennsylvania, and the Newport News Shipbuilding and Dry Dock Company, Newport News, Virginia.

Mr. Morrell noted that "the demand for tanker tonnage has led to the utilization of all available tonnage of this type"

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and in addition has fostered a large scale construction program. The program at the time Mr. Morrell spoke consisted of 11 tankers of 26,000 tons d.w. each to be built at the Sun yard, two of which are for the Standard Oil Company of New Jersey, two for the Gulf Oil Corp., and the other seven for the Tankers Navigation Company to be chartered to the Socony-Vacuum Oil Company on a long-term basis; four tankers at Bethlehem Sparrows Point yard, 18,000 tons each and two of 28,000 tons each; and several large tankers at Newport News Shipbuilding and Dry Dock Company.

The tankers to be constructed by Sun, Mr. Morrell said, originated from their own design, which was at first "standard" but later, after each oil company had made its own changes, were only standard in general particulars.

Principal hull dimensions for the Sun tankers are as follows: 600 ft. between perpendiculars, 82 ft.-6 in. molded breadth, 46 ft.-6 in. molded depth, with a designed draft of 31 ft.-5 in., deadweight at international summer draft about 26,500 tons, SHP 12,500 normal at 112 RPM and a trial speed of 16 knots.

(Continued on Page 46)

THE SOCIETY OF PORT ENGINEERS . . . Top row, SOCIETY OF MARINE PORT ENGINEERS, NEW YORK, left to right: RAY RISHER, Chief, Maintenance & Repair Section, Standard Oil Co. N. J.; CHESTER ROE, President, Sea-Ro Packing Co.; GUY BENNETT, Assistant Manager, Port of New York Office, Standard Oil Co. N. J.; ROBERT W. MORRELL, extreme right, Consulting Engineer, who addressed the Society with his son, ROBERT C. MORRELL, who works with him.

COLUMBIA RIVER AREA, center row, left to right, standing: STANLEY WATT, Matson Line; W. THIBADEAU, American Bureau of Shipping; HUGH D. SHAW, Shaw Brothers and Associates; J. WATERS, Pope & Talbot, Inc.; J. SLATER, Shaw Brothers and Associates; J. McCANN, American Bureau of Shipping. Left to right, kneeling: CLYDE O. TOOLE, American Mail Line; DAVID SHAW, Shaw Brothers and Associates; W. TROUT, Marine Electric Company; C. MARSH, Sperry Gyroscope Company; W. THOMPSON, Thompson Instrument Service. Extreme right photograph, Left to right: WILLIAM MURPHY, Albina Engine and Machine Works; AL FORD, Westinghouse Electric and Manufacturing Company.

Bottom row: Left photo, COLUMBIA RIVER AREA, left to right: WALTER A. NAGELY, Boiler and Engineering Supply Company; H. G. MARTELL, The Texas Company; GEORGE LARSEN, General Petroleum Corporation; E. SAUMBY, Standard Oil Company of California.

PUGET SOUND, right photo; left to right: H. V. MOORE, port engineer, Matson Line, Seattle; President, Society of Port Engineers of Puget Sound; L. T. HOLT, Seattle Metallurgist, Principal Speaker, March meeting of the Society.

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(Continued from Page 45)

Describing the hull characteristics of the seven tankers he is handling, Mr. Morrell said they would have a straight sheer with no deadrise; 10 main cargo tanks each 39 ft.-4 in. long, divided by transverse bulkheads, and would be three abreast. The construction throughout will be a combination of welding and riveting. The problem of welded construction was thoroughly thrashed out between the builders and purchasers and the result was to introduce more riveting than originally proposed, to provide a series of rivet seams on deck and at the lower edge of the sheer strake, upper and lower edges of the bilge strakes and at the flat keel. The tankers will be of the three-island type.

Another factor given much consideration, Mr. Morrell said, was the selection of hull steel. The American Bureau of Shipping is introducing new requirements for the chemical and physical properties of hull steel for welded vessels. These new requirements do not apply to vessels now under construction but, since these requirements are the result of long research into the problem of welded construction, the tanker company decided to abide by them on the new tankers for all deck and shell plating over one-half inch. The cost of this steel is approximately three dollars per ton higher than steel previously used, for plating one-half inch to one inch thick.

The cargo pumping arrangement on the new tankers, according to Mr. Morrell, consists of 3 turbine-driven pumps capable of handling 4,000 gallons per minute each. The turbines will take the full boiler steam pressure and temperature, and will exhaust into the main condenser in port. A small auxiliary condenser will be installed to be used in an emergency such as necessary repairs to be made to the main condenser or main turbine in port. There will also be three motor-driven stripping pumps.

The main propulsion unit will be double reduction geared turbine of the cross compound type. The K factors presented a problem, since the ships are being built to meet both Lloyd's and the ABS' regulations.

The two water-tube boilers will have a working pressure of 600 lbs. at 800° temperature. This gave rise to another point of discussion since the original design called for 800 lbs.—850° units, but the 600 lbs.—800° job was decided upon.

Economizers are being installed taking feed at 240° temperature with no air heaters. The main circulating pump will be turbine-driven. Avoiding location of the main injection too far aft presented another problem. There were two possible solutions: (1) deaereating system, or (2) move the main injection forward. The latter solution was effected by recessing the port wing bunker tank.

The balance of the engine room auxiliaries are motor-driven, with the exception of one large pump. There will be two generators of 300 KW each to develop 220 volts DC on a two-wire system. Also a diesel-driven auxiliary generator, 60 to 75 KW.

In addition to the seven Sun tankers being constructed for Tankers Navigation Company, Mr. Morrell is acting as consultant for two building at the Bethlehem Sparrows Point yard. These are smaller tankers of 18,000 d.w. tons each, 524 ft. l.b.p., 68 ft. molded breadth, 38 ft.-6 in. molded depth, 29 ft.-8 in. summer freeboard draft, developing 5500 SHP normal, and having a trial speed of 14½ knots. The tanks for these 18,000 ton tankers are 36 ft.-6 in. long and located three abreast. Each tanker has a capacity of 151,500 bbls. and is of welded-riveted construction. The machinery will be that originally made for a Victory ship.

The other size of Bethlehem ships are 28,000 d.w. tons each, 595 ft. l.b.p., 84 ft. molded breadth, 44 ft. molded depth, 33 ft. summer freeboard draft, with a capacity of 240,000 bbls. The propulsion is provided by geared turbines at 600 lb. working boiler pressure at 850° temperature, developing 12,500 SHP normal and 13,750 SHP maximum, with a trial speed of 16¾ knots.

Mr. Morrell also discussed briefly the new Coast Guard and ABS rules, suggesting that everyone connected with the technical phases of ship operation give them careful study.

Puget Sound Port Engineers Discuss Fractures in Metals

Fractures in metals, causes and effects, were discussed in an illuminating address and question and answer period at the March meeting of the Society of Port Engineers of Puget Sound. Led by L. T. Holt, Seattle metallurgist, the discussion included a brief history of wrought iron and steel manufacture. With the use of slides illustrating highly magnified sections of fractures the program pointed into causes of fractures in drive shafts, piston rods, stern frames and other ship parts. Members in general concluded the discussion exemplary of the type of program most preferred.

Committee appointments for 1948 confirmed at the meeting include:

HOUSE AND PROGRAM . . . Captain L. C. Perry, chairman; F. H. Gallagher; Captain C. E. Gannon; J. W. McNulty; J. P. Robb; J. W. McGuire.

PUBLICITY . . . J. D. Clarke, chairman; R. P. Nelson; W. S. Millett; E. D. Tucker; Captain W. F. Whalen; L. S. Dial.

WELFARE . . . Captain A. F. Reynaud, chairman; F. H. Howard; M. C. Merrifield; F. I. Nystrom, Jr.; E. W. Lariviere; R. R. Askren.

TECHNICAL . . . J. D. Gilmour, chairman; George King; H. P. Stevens; John Wachtler; Roy Knowles; William Smith.

LEGISLATIVE . . . J. D. Wilson, chairman; H. M. Woodward; F. K. Young; J. F. Robertson; E. F. Ramey.

Date of annual picnic was announced as set for Saturday, August 21. Decision was reached to have no summer recess and to continue monthly meetings throughout the year.

Death of James G. Coleman, marine engineer and surveyor, ATC, was announced to members by bulletin in late March. Coleman was president of M. E. B. A. Local No. 38 at the time of his death.

Members in new positions include L. P. Lowrie, formerly of the Maritime Commission, acting as port engineer for the Department of Indian Affairs, supervising repairs on the ms NORTH STAR. Whereabouts of other former Maritime Commission surveyors are reported. Joe Geisler has temporarily retired to his garden patch at Seattle; Bob Buzzard is acting as standby engineer on a Waterman ship under repair. E. W. Eggerstedt is on a temporary assignment at sea. O. A. Price has hung out his shingle as marine engineer and naval architect. Herbert Emmons has been serving as standby engineer on ships under repair. Continuing with the M. & R., with William T. Hayes in charge, James Bent as assistant, are surveyors H. N. Hottendorf, E. R. Lacey, E. W. Lariviere, Howard P. Stevens, and E. D. Tucker. E. S. Ramey, port engineer, Luckenbach Steamship Company, is temporarily assigned to duties at Baltimore.

Portland Port Engineers Study Drydock Problems

March meeting of the Society of Port Engineers, Columbia River area, was devoted entirely to discussions of civic activity with the subject of drydocking facilities taking the spotlight. Dry dock facilities at Portland include two owned by the Port of Portland, and one owned by the Navy and operated by Consolidated Builders, Inc. The two port owned docks are available to all ship repair firms, at published tariff rates. The more modern Consolidated operated dock is also available to other repair firms, but on terms regarded unfavorable by marine surveyors, port engineers, and competing firms.

Society members claim the situation results in a competitive disadvantage with Puget Sound and other ship repair centers. They contend the two port owned docks, of wooden construction, one built in 1903, the other in 1921, should be improved or replaced, and heavier lift equipment installed. They consider heavy lift equipment and drydocks are still available as war surplus. In an attempt to spur official action a committee composed of Kenneth Webb, U. S. Salvage Association; William Murphy, Albina Engine and Machine Works; and Carl Vom Cleff, Northwest Marine Iron Works, has been named to press the issue.

Announcement was made that nominations for officers for 1948-1949 term would be received in May and annual election will be held in June. Members adopted a motion to dispense with regular meetings in July, August and September. A challenge from the Portland Shipping

(Continued on Page 55)

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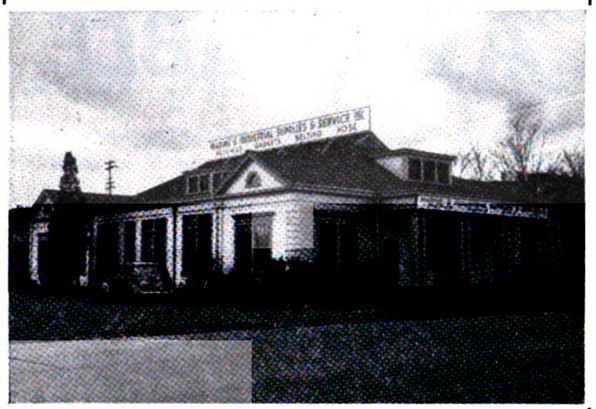

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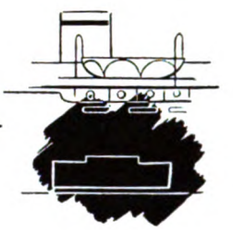

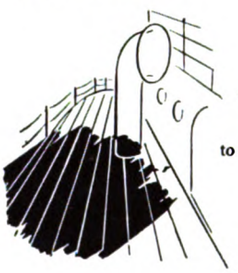

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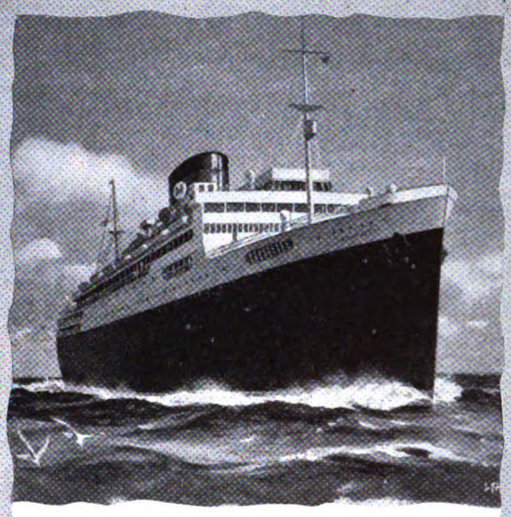

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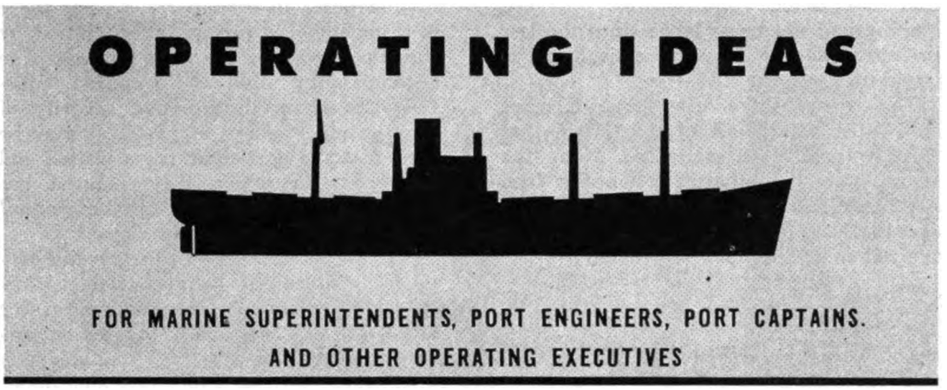


How to Control Auxiliary Exhaust Steam Pressure

By R. P. GIBLON
Marine Engineer
George G. Sharp

The proper control of the auxiliary exhaust steam pressure is becoming of increasing importance to the operating engineer since on the modern steam turbine driven vessel it effects the performance of the entire power plant. In these vessels the auxiliary exhaust steam is used for feed heating, evaporators, gland leakoff ejectors and sometimes for a source of auxiliary turbine gland sealing steam. For all of these uses it is essential that the pressure be maintained relatively steady and close to the designed conditions. The power produced and efficiency maintained by steam driven auxiliaries connected to the exhaust main is directly effected by the main pressure. Also, if the exhaust main pressure drops too low, operating difficulties may be encountered with rod and piston of steam driven reciprocating auxiliaries due to improper cushioning in the steam end. Should the exhaust main pressure be allowed to drop so low that a vacuum develops in the exhaust main, then air will enter the system and be absorbed in the feed water in the direct contact feed water heater. The air in the feed water will cause corrosion in the boilers and economizers. On a number of occasions we have observed vacuum in the exhaust main and the deaerating heater, particularly when going astern due to improper operation of the makeup valve when there is no extraction steam availble from the turbine.

On most turbine driven vessels, steam may enter the exhaust main from several sources; (a) from steam driven auxiliaries, (b) extraction steam from the turbines, (c) live makeup steam from the boilers reduced to the proper pressure, and (d) vapor from a high pressure type makeup evaporator. Steam from these sources is usually used for heating feed water in a direct contact type of feed water heater, as well as a source of steam to low pressure evaporators, gland leakoff air ejectors and sometimes as a source of steam for auxiliary turbine gland sealing. Any excess steam is dumped to a condenser via a back pressure valve.

Turbine Bleeder Valves

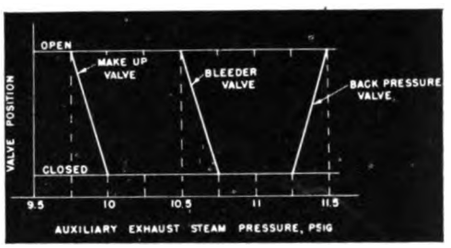
Most vessels are fitted with only two automatic valves to control the steam pressure, one to regulate the amount of live makeup steam and the other to control the steam dumped to the condenser. The control of steam extracted from the turbine bleeder in this case is manual and it is necessary that the bleeder valve be readjusted wherever the demand for steam is increased or decreased or whenever the steam flow through the turbine is increased or decreased due to changes in nozzle or throttle valve setting. If the turbine bleeder valve is not carefully adjusted by the operator it is easily possible to have too high a pressure in the exhaust main with the result that the back pressure valve opens and the bleeder steam dumps directly to the condenser resulting in a loss of power and efficiency since the bled steam dumped to the condenser does no work in the lower turbine stages. If the bleeder valve is not opened sufficiently to satisfy the demand for exhaust steam, then the pressure in the exhaust main will drop, and the live makeup steam valve will open and deliver steam from the boilers to the exhaust main. This manual method of bleeder control is generally satisfactory when the quantities of steam delivered to and taken from the exhaust main remain practically constant for long periods of time, resulting in infrequent adjustment of the bleeder valve.

If, however, the quantities of steam delivered from the auxiliaries and required by the feed heater, evaporators and other units vary considerably or frequently, then it is desirable to have three automatic control valves installed, one to regulate the amount of live makeup steam, one to control the steam dumped to the condenser and one to control the amount of steam extracted from the turbine. These valves should be so located that the simplest piping arrangement is secured. Their feeler connections, however, should be made at a common point in the exhaust main so that all valves respond to the same pressure and are not effected by variations in pressure in the main due to friction drops in the piping. If the valves are of the external pilot type this arrangement of feelers can be easily accomplished, and also there is an additional advantage in having all three pilots located close together so that their operation with respect to one another can be checked easily.

Direct Contact Feed Heater Pressure

It is most important that the pressure in the direct contact feed heater be maintained constant at all times so that the pressure at the feed pump suction will remain constant. Should the pressure at the pump be allowed to drop rapidly the pump may lose its suction, often resulting in serious damage to the unit. It is advisable therefore, to locate the feeler to the control valves near the steam inlet to the feed heater.

In most of the vessels built during the past ten years, the designed pressure to be maintained in the direct contact feed heater is 10 psig corresponding to a feed temperature of 240 deg. F. Under these conditions the operating range of the valves should be approximately as illustrated in the accompanying diagram.



From this it will be noted that whenever the makeup and/or turbine bleeder valve is open the back pressure valve is always closed. This will prevent live steam from passing directly to the condenser. Also the makeup valve is so adjusted that it will not open until the turbine bleeder valve is wide open. This assures maximum use of bleeder steam with resulting increase in overall plant economy. Under most normal operating conditions at sea the bleeder valve will be in operation maintaining an exhaust main pressure slightly in excess of 10 psig. This excess of exhaust main pressure over feed heater pressure, will depend upon the installation, and may be necessary to overcome the pressure drop from the exhaust main through the piping and heater inlet valve to the heater.

Installations of this type using three control valves have been made and the method of control has proven entirely satisfactory.

Equally as important as the proper method of installing the control valves is the proper sizing of the valves so that they will meet all the various operating conditions. In the case of the makeup valve it should be sized so that it can deliver all the steam required for feed water heating at full power less the steam available from normally operating auxiliaries. No credit is given to the bleeder when sizing the makeup valve, since the turbine bleeders may be closed,

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and since bled steam is not available when going astern. Allowance should be made for the effect of cold condensate caused by high vacua when in cold sea water. This valve should be capable of supplying at the same time all of the steam normally necessary for the evaporators, gland seal leakoff ejectors and any other unit requiring exhaust steam.

The turbine bleeder valve should be sized similar to the makeup valve except that the steam requirements for feed heating will not be as large since the low pressure bleeder may be considered to be in operation.

The back pressure valve should be sized so it will handle all of the steam that could possibly be delivered from the steam driven auxiliaries when the feed heating requirements are at a minimum and the evaporators using exhaust steam are not in operation.

How to Determine Effects of Ship Bottom Fouling

By EDWARD V. LEWIS
Naval Architect
George G. Sharp

An ever present but somewhat baffling problem for both the naval architect and the ship operator is that of the fouling of a ship's bottom and propeller. It is well known that a gradual reduction in speed or increase in fuel consumption takes place after drydocking for any ship in salt water service, this effect being greater in some services than in others. However, very little information seems to be available on the actual amount of this effect in different services under various conditions.

Accordingly an attempt has been made here to bring together some of the scattered information which is available on several of the most interesting phases of the fouling problems.

Nature of Fouling

Very complete studies have been made by various investigators both here and abroad of the behavior of painted surfaces immersed in salt water and of the types of organisms causing fouling. A freshly painted surface exposed to sea water will first undergo surface roughening which ordinarily will add to the frictional resistance regardless of fouling. The type of fouling growth which often forms first on a clean hull is microscopic slime which is visible as a gray or brown film. Later vegetable and animal growths begin to appear, as spores and larvae attach themselves and continue their life cycles.

The vegetable growths consist of various sea weeds which grow most abundantly in a belt near the waterline, extending downward to the limit of light penetration. Their growth is affected considerably by the climate and by seasonal variations. Thus the rate of fouling is much more rapid in the warm water of a tropical port than in a cold water port, and in temperate ports fouling growth is more abundant during the summer than in the winter months.

Animal growths consist of such organisms as barnacles, tube worms, hydroids, mussels, etc. They grow over the entire bottom, some types actually perferring regions with the minimum amount of sunlight penetration. Temperature effects are generally similar to those applying to vegetable growths, but seasonal variations are even greater. In temperate ports the growth of animal fouling is greatly reduced in the winter and may cease entirely for several months.

Factors Affecting Rate of Fouling

In addition to the climatic and seasonal effects previously mentioned, the degree of salinity of the water has a marked effect on fouling. Fresh water is fatal to most animal and vegetable organisms, although many shells remain fixed to the ship's plating after the animals which formed them have died. Generally, considering both animal and vegetable fouling, periodic visits to fresh water ports usually cause an appreciable reduction in the degree of fouling.

All types of fouling are affected by motion of the ship. Since time is required for a spore or larva to attach itself to a surface, no growth can start while a ship is in motion. It thus appears that the actual time spent in port is of more significance than the total time out of dry dock. Therefore, if ships are compared on the basis of total time out of dock, an adjustment should be made in case the proportion of time in port is greater or less than the average.

There are many local port conditions which also have appreciable effects on fouling, such as light intensity, degree of contamination by oil and sewage, and geological features which may affect the relative abundance of fouling organisms in that port. In certain river ports there is a beneficial scouring action caused by the silt carried by the river current. The accompanying table was prepared tentatively to show the relative severity of fouling in a number of ports. It may be seen that the particular ports visited and the order in which they entered has more effect on fouling than the general climatic conditions of the route.

The use of antifouling paint on the bottom has of course an appreciable effect on fouling, although exact figures on this effect are not available. Its action depends upon poisonous ingredients which slowly dissolve in the water and deter, though they cannot entirely prevent, the growth of fouling organisms. There has been considerable discussion recently of the use of Navy type plastic bottom paints for merchant vessels. An increase in the intervals between drydockings is the advantage to be expected, against which must be weighed the added cost of application and the effect of the added frictional resistance of the paint before fouling takes place. No conclusive data are at present available on the comparative frictional resistance of plastic and ordinary antifouling paints after different periods of immersion. Hence, the only means of determining the overall advantage of one system over the other is by careful analysis of the logs of ships in the same service having both types of paint. In considering plastic paints it should be remembered that there are limitations in possible extension of the docking interval, since fairly frequent dockings are required in merchant ships for other purposes than bottom painting. Also since plastic paints are adversely affected by exposure to air and sunlight, especially in a warm climate, special consideration must be given to the painting of the area between the light draft and full load waterlines.

Effects of Fouling

Data on the quantitative effect of fouling on power and speed are fragmentary. But an analysis of available published data, plotted in graphical form, shows a definite trend which may be useful for purposes of estimating the effect of fouling on speed, power or fuel consumption.

(Continued on Page 52)

CLASSIFICATION OF PORTS
(Provisional)

Cleaning Ports				
Non-scouring	Scouring	Clean Ports	Dirty Ports	Foul Ports
Bremen	Calcutta	Most British Ports	Alexandria	Freetown
Brisbane	Shanghai and Yangtse Ports	Auckland	Bombay	Macassar
Buenos Aires		Cape Town	Colombo	Mauritius
East London (S. Africa)		Chittagong	Madras	Rio de Janeiro
Hamburg		Halifax	Mombasa	Sourabaya
Hudson River Ports		Melbourne	Negapatam	
River Plate			Karachi	
St. Lawrence Ports		Valparaiso	Pernambuco	
Manchester		Wellington	Santos	
		Sydney (varies)	Singapore	
			Sues	
			Tuticorin	
			Yokohama	
			Some Norwegian Fjords	

From "Hull Corrosion and Fouling" by Guy D. Bengough, North East Coast Institution of Engineers and Shipbuilders, Vol. 59, 1942-43.

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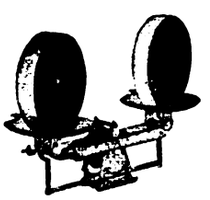
Take one of your present pump valves and a Sea-Ro No. 535 of the same size. Boil them together in water for 24 hours. Then let the micrometer tell you its amazing story of Sea-Ro's resistance to swelling.



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Weigh both valves before boiling and then after. Let the scales reveal, as no words can, how Sea-Ro's laminated phenolic base resists absorption.

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Spot both valves on a face plate. You will immediately notice the velvet-smooth surface of No. 535 machine-ground into the dense, fine-grained Sea-Ro Valve.

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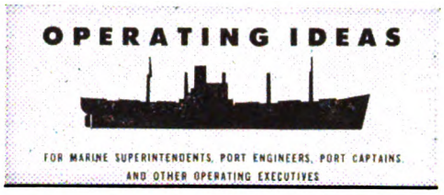

(Continued from Page 50)

The accompanying chart shows the average increase in frictional resistance for varying periods of time out of dry dock, Curve A being for average voyages between temperate ports with average rates of fouling. Curve B is for voyages in which a number of bad fouling ports are touched upon (e.g. United Kingdom to the Mediterranean). Curve C is an approximate curve which might be applied to ships having an unusually short port turnaround or trading regularly between clean and scouring ports. The curves apply to ships having ordinary antifouling paint.

The coefficient C_k is the addition to the frictional resistance coefficient due to fouling, using the Schoenherr formulation (see bibliography). In this notation the additional frictional resistance due to fouling is obtained from the formula,

$$\text{Added resistance} = 2.84\ C_k\ S\ V^2,$$

where S is the wetted surface in sq. ft. and V is the speed in knots. The increase in shaft horsepower is then,

$$\text{Added SHP} = \frac{.00307\ (\text{Added Resistance})\ V}{C},$$

and combining formulas,

$$\text{Added SHP} = \frac{.0087\ C_k\ SV^3}{C},$$

where C is the propulsive coefficient (approximately .80 for most modern single screw cargo vessels).

As an example of the use of these curves, suppose it is desired to find the increased fuel consumption in order to maintain a speed of 16½ knots after a ship has been out of dry dock for six months, assuming the ship to be a typical C-3 type cargo ship at full load draft in the service from New York to the east coast of South America. The value of C_k for average voyages after six months out of dock is obtained from the chart.

$$C_k = .0009$$

$$\text{Added SHP} = \frac{.0087 \times .0009 \times 44{,}400 \times (16.5)^3}{.80} = 1{,}950$$

If the normal fuel consumption is .60 lbs./SHP-hr. with clean bottom, the increase is

$$\frac{1950 \times .60 \times 24}{2240} =$$

12.5 tons or 84.0 bbls. per day.

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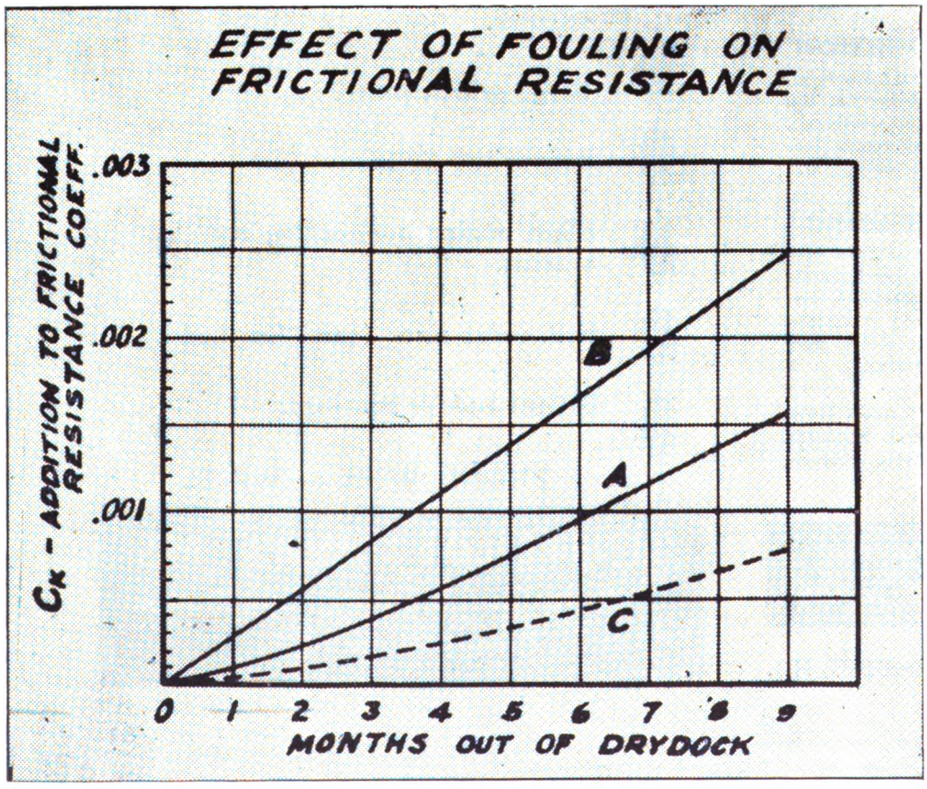

Tanker Design

(Continued from Page 42)

loading operation, the CO_2 and accumulated explosive vapors are vented off through a flame arrestor located at the mast head. Positive pressure is maintained in the inert gas system through all phases of operation.

All cargo and fuel tanks must be fitted with steam smothering connections for fire extinguishing in accordance with U. S. Coast Guard Regulations; 1-½" steel pipe is commonly used and the minimum steam pressure is 100 P.S.I. The machinery spaces and cargo pump room are commonly protected against fire by the installation of CO_2 systems.

When it is necessary to clean tanks, they are washed down by jets of hot salt water (200° F.) sprayed by a special machine at a pressure of 175 P.S.I. against deck heads and bulkheads; removing oil residues together with accumulations of scale and rust. The tank cleaning machine is inserted into the tank through a special deck plate. It consists of a small turbine driving rotary and opposed nozzles mounted on a shaft. The hot salt water is supplied by the fire mains which are designed to serve the dual purpose of tank cleaning and fire fighting; heaters being installed in the line.

Conclusion

The scope of this paper is inclusive of many of the phases of tanker design. The author has taken the liberty of presenting only the general aspects of each phase in order to contain the subject matter within reasonable limits.

To the Sun Shipbuilding and Dry Dock Company and the Sun Oil Company who have generously permitted the use of statistical and technical data, etc., the author wishes to express his thanks.

The modern tanker is an economical and efficient carrier. Further improvements in design, construction and operation will result from experience gained with present ships, from continued experiment and research and from the application of improved materials and techniques. The tanker field has been so highly developed that it is difficult to foresee the possibility of achieving any phenomenal gains in efficiency or economy; progress is more likely to be reflected as a gain in the range of fractional percentages.

↕ ↕ ↕

Shipbuilders' Council

(Continued from Page 25)

probability at the very time that all repair yards and drydocking facilities will be congested with work. If the latter alternative be adopted, there is duplicate drydocking involving unnecessary expense and additional time."

In contrast, the Council cited the advantages of private handling of all such work.

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Left—Tuna Clipper Pan American being freshly painted with Navicote Copper. Right—Same boat after six months operation. Note fouling on unpainted rudder . . . and note "Navicote Clean" hull.

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'36 MERCHANT MARINE ACT

(Continued from Page 28)

sel over a voyage of sixty days on a typical trade route.

Figure 2
Estimated Operating Differential

	U.S. Flag Costs	Foreign Flag Costs	Foreign % of U.S.
Wages	$33,000	$11,000	33.3%
Subsistence	6,200	4,300	69.4
Maintenance	6,500	5,200	80.0
Repairs	7,500	5,000	66.7
Insurance	10,000	8,000	80.0
Total	$63,200	$33,500	53.0%

Because of the foregoing, the economists of the shipping industry estimate that Congress must appropriate as much as $50.0 million annually to meet the gross parity payments requirement of the future. Even this amount might be insufficient if, in line with the recommendations of the President's Advisory Committee, we should embark on a large passenger ship program. Because of the substantial difference in wages and manning scales in the stewards' departments, a passenger ship program would mean a substantial increment in the aggregate subsidy bill.

Available Funds

In spite of the obviously high appropriations necessary to meet the statutory parity requirements, Congress has so far been more than tight-fisted. Only $15.0 million was appropriated for operating differential payments in fiscal 1947 and only $10.0 million in fiscal 1948. For fiscal 1949 the President in his budget message asked for $30.0 million but Congress seems determined to grant only a small fraction of that amount.

Conceding that the immediate practical effect of subnormal subsidy appropriations is nil, the position once actual payments have begun may be critical. Various plans have been suggested for a fair rationing of the limited appropriations against the subsidy claims, but all violate the spirit of the 1936 Act.

Probably the fairest compromise would be to divide the appropriations among all the claimants in such a way that everyone would receive a grant sufficient to bring total earnings up to ten percent on capital necessarily employed. Since, under existing earnings conditions, some companies would not need any subsidy allocation, there probably would be enough money to go around. Any unsatisfied claims could then be accumulated as an accrual against future recaptures or as a moral obligation against the Congress.

Early this year almost all the subsidized operators indicated willingness to accept some such compromise, but the outcome is not wholly clear. Some shipping people still think that now is not the time to resume subsidy payments and some feel that the industry should insist on no compromise with the basic principles of the 1936 Act. Above all there is the problem of selling the Congress on any plan satisfactory to the operators.

In any event the operators must not compromise on basic principles to the extent of risking fatal subsidy limits in the future. Just as the 1936 Act was drawn up in an atmosphere of operating deficits the current compromises are being discussed in an atmosphere of operating surpluses. Times change and the industry may soon be cast back into the operating atmosphere of 1936. Such is the real problem to be grappled with today.

Who Gets The Subsidy

A common misconception is that the shipping industry is hopelessly divided on the question whether there should be an operating differential subsidy at all. Probably nothing could be further from the truth. With few exceptions most shipping people agree that there must be subsidies on the foreign trade routes now or sometime in the future. The real issue is the method of distribution.

For the greater part of the effective period of the 1936 Act twelve companies have had operating differential contracts on one or more foreign trade routes. Some have several routes. Furthermore, while there have been many additional awards and extensions in recent years, only one company has been added to the group to be subsidized.

Nor is any large number of awards to additional companies probable without sweeping changes in Maritime Commission policy. There are, for example, only thirty-two essential trade routes and, with the confines of the globe what they are, it would be difficult to devise many more in American trades. Such routes as from our Pacific Coast to South Africa might be added for strategic reasons but, from a quantitative standpoint, they are of negligible importance. A few of the existing essential trade routes remain unsubsidized but they are either unimportant or not likely to be subsidized in the near future. At least one essential trade route may not be wanted by any American flag operator.

One answer to the problem of augmenting the list of subsidized operators would be the abandonment of the Commission's policy of the chosen instrument. In only one exceptional case (American South African Line and Seas Shipping) have two companies been subsidized on the same trade route. Otherwise the Commission has refused to approve more than one subsidy on each trade route.

The law merely states that no operator may be subsidized on a route already occupied by a U.S. line unless the existing service is inadequate. But our conception of national defense and trade adequacy has been drastically revised since the pre-war period. We are now carrying approximately fifty percent of our own trade in American flag ships as compared with a pre-war participation almost exactly half as great. A policy appropriate to pre-war reality may not be equally appropriate to our enlarged post-war objectives.

The case for the chosen instrument policy boils down to this single proposition: We should not subsidize two U.S. flag operators to compete against each other. This proposition takes on an added meaning if one of the companies has built up its physical and intangible assets in the trade painstakingly over a long period of years and is then threatened by a new-comer who, for political or other reasons, is able to persuade the Maritime Commission to grant a cut in the trade.

Probably the most sweeping rebuttal of this position was written in the Report of the Post War Planning Committee to the Maritime Commission, June 15, 1946. The Report pointed to the satisfactory effects of the duplicating subsidy to Seas and American South African Line. It pointed to similarly satisfactory effects for foreign lines who customarily follow the duplication practice. It pointed to the disadvantages of placing a single entry in a trade dominated by a large number of foreign flag operators. It came very close to saying that the Commission should abandon the chosen instrument policy as a matter of public duty where the cargoes carried by the chosen instrument are not substantial.

Whatever may be the general application of these claims, they certainly underscore our problem on many trade routes. On one of our most important trade routes there are eighteen berth competitors of which only two are strictly American flag operators. Within the liner conference, in the solicitation of traffic and in other respects the foreign operators occupy a preponderant position through sheer weight of numbers. Yet only one of the American flag operators is subsidized and, when the going becomes more difficult, it remains to be seen whether the other can maintain its position through American flag operations. This last clause may be the focal point of the argument. If the unsubsidized operators should ultimately be forced into foreign flag operations, they would still be competing with the subsidized American operator on a parity basis in much the same way as if they had been granted a subsidy in the first place. An important difference—and it is important to the American merchant marine—is that they would be transferred to foreign flag operations.

It is difficult to imagine any clearer conflict than the Report of the Post War Planning Committee and the chosen instrument policy of the Maritime Commission. True, the Commission never formally accepted the Report but it did transmit the Report to the House Merchant Marine and Fisheries Committee with the reservation that it did not necessarily agree with all the conclusions.

There is one final point about the chosen instrument policy. It is a policy of restriction, of limitations on the freedom of entry into trade. At its worst it would tend to preserve inefficiency and to prevent that long-term flow of replacements which has figured so prominently in America's economic progress. At its

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'36 MERCHANT MARINE ACT

best it tends to work unfairly against the smaller operators in any given trade.

A Possible Compromise

The issue is so critical to the American shipping industry that it probably will not be decided on the basis of any abstract principles of fairness. Best estimates are that existing subsidy awards would provide for a maximum of about 250 subsidized vessels but, based on past experience, it probably would be unwise to count on more than 2.0 million deadweight tons of subsidized vessels. In contrast the Maritime Commission has estimated the postwar normal dry cargo fleet at 7.4 million deadweight tons, a figure which our military authorities do not appear to regard as liberal.

In view of the depressed outlook for our domestic shipping industry, we cannot rely on more than 2.0 million deadweight tons in this area to close the gap between the subsidized total and the overall vessel requirement. As much as 3.0 million deadweight tons of additional shipping must be accounted for and most of this additional total would have to be subsidized.

One of the most active areas of subsidy research of today is tramp shipping. In spite of our natural disadvantages in the tramp field, it is possible that as much as one million tons of tramp shipping may be subsidized. But a tramp subsidy raises serious complications. It runs counter to the basic trade route principle of the 1936 Act and would raise difficult administrative problems since the tramp-liner competition would have to be regulated. The Maritime Commission has had considerable success in regulating the types of cargo to be carried on ships chartered from the Government. Whether they would have equal success in regulating the cargoes carried on privately owned tramps would be another matter.

In any case it will probably be necessary to ease the restrictions on the number of subsidized operators per trade route. To open up the trade routes to all comers would be unwise. The government subsidy should not be used as an instrument for promoting instability in shipping. But a judicious administration would turn up several cases where trade routes could support more than one subsidized operator.

The big hurdle would be the criteria for judging just what trade routes should be built up with more than one subsidized operator. Probably no better standards could be found than those written in the 1936 Act. If an unsubsidized American operator should be operating satisfactorily against all competition or if a single subsidized operator should appear to be handling all foreign competitors effectively on a relatively modest trade route, there would be no need for additional subsidized operators. If a single subsidized operator is found to be vastly outnumbered by foreigners, if he exercises relatively little influence in the conference and in the commercial markets and if his participation in the trade is below the national average for all American flag operators, then the Commission should give serious consideration to at least one more subsidized operator in the trade.

There is no easy answer to the problem of what practical action should be taken. Probably the logic of events will force the Commission to modify its policies. Perhaps some action by the Congress may be necessary. But at this juncture it does not appear that any sweeping revision of the 1936 Act would be prudent.

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The 444 crew members aboard Matson's luxury liner LURLINE are classified into 160 ratings.

Port Engineers

(Continued from Page 46)

Club and the Portland Propeller Club for a soft ball game was accepted. Don Bartosch, Combustion Engineering Company and David Shaw, Shaw Brothers and Associates, were named to a committee to conclude arrangements with the challengers.

The welfare committee reported James Saviski, chief of the M. & R. Division, Maritime Commission, had returned home from the hospital following a long series of operations. Some part of a long convalescent period, it was reported, will be spent in California. George Goodell is acting chief during Saviski's absence. Peter Muntz and C. Lang continue with the M. & R. Division as surveyors. James Young, formerly with the Division, has joined the Albina Engine and Machine Works staff.

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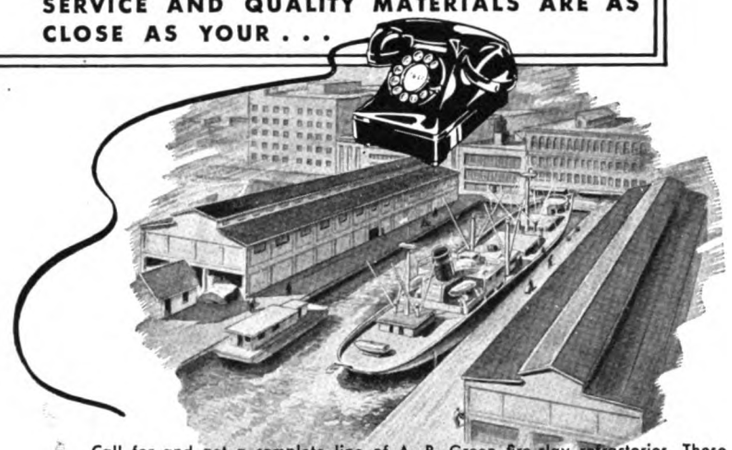

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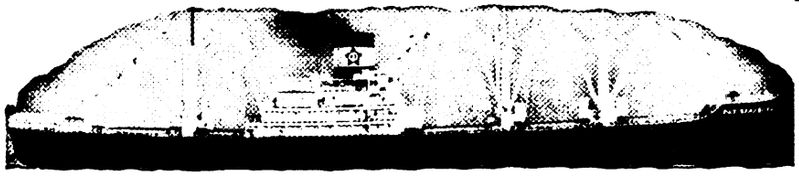

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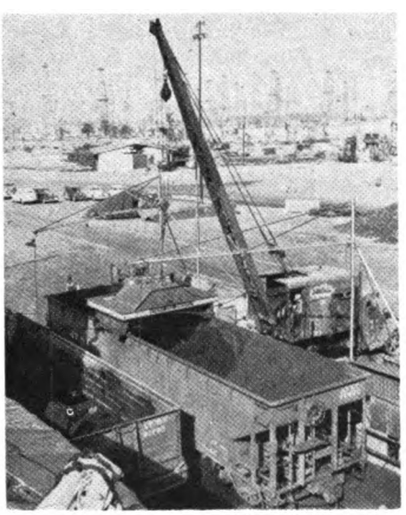

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C. R. Slawter Joins Nordberg As Special Representative

R. W. Bayerlein, vice president of the Heavy Machinery Division of Nordberg Manufacturing Company, Milwaukee 7, Wisconsin, has announced the appointment of Clayton R. Slawter as a special representative in the sales department.

Mr. Slawter was associated with the U. S. Maritime Commission from 1940 to 1948 doing field work in connection with operation and performance of vessels in service. Prior to 1940 he was associated for six years with Gibbs & Cox, New York, naval architects, where he did preliminary design on machinery installations in ships.

Mr. Slawter's wide experience in the marine Diesel engine field will be utilized in connection with Nordberg marine installations. He is a member of the Propeller Club and of the American Society of Naval Engineers.

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FRED MILLER, head of Marine & Industrial Supplies & Service, Inc.; the company's new headquarters at Portland, Oregon.

Marine Service Mart Arranged By Fred Miller at Portland

Fred Miller, manager, Marine and Industrial Supplies and Service, Inc., Portland, Oregon, announces removal of company offices and warehouse to 2501 N. W. Front Avenue. Located in the center of Portland's waterfront activity, possession and management of an entire building has been arranged by the company. Plans intend that space not required by the company will be rented to other firms catering to the marine trade to result in the location becoming the headquarters for wide variety of marine services. Early tenants in addition to the Fred Miller company include Submarine Signal Company and Trade Development Company.

Miller, formerly associated with Plant Rubber and Asbestos Works, is well known in marine and industrial circles. Handling power plant, marine, mill and engine room supplies including packing, belting, hose and gaskets, the company acts as manufacturer's representative for Thermoid Company, Plant Rubber and Asbestos Works, Marshalltown Manufacturing Company, Doyle Vacuum Cleaner Company, Mid-West Fulton Machine Company and others.

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Hagan Develops Power Unit For Precise Positioning

A power unit employed for positioning accurately over small distances in accordance with received pneumatic pressures is the "Micropositioner," now being announced by Hagan Corporation, Pittsburgh manufacturing and engineering firm.

The "Micropositioner" is a device capable of precise positioning in addition to exerting considerable powers, Hagan research engineers report. As an example, they explain, the new unit, employing a pneumatic pressure of 60 psi, can accurately position a lever within a few thousandths of an inch, over a range of 0 to 0.5 inch—working directly, without use of mechanical linkage.

Successful test applications indicate that the "Micropositioner" is well-suited for positioning of oil burner tips, injection nozzles, governor gear on boiler feed pumps, and other applications requiring precise positioning.

A FAST ASSIST—From Atlas Maritime Corporation's San Francisco warehouse to Bethlehem Steel's 27th St. Brooklyn yard to speed a badly needed tanker back to sea.

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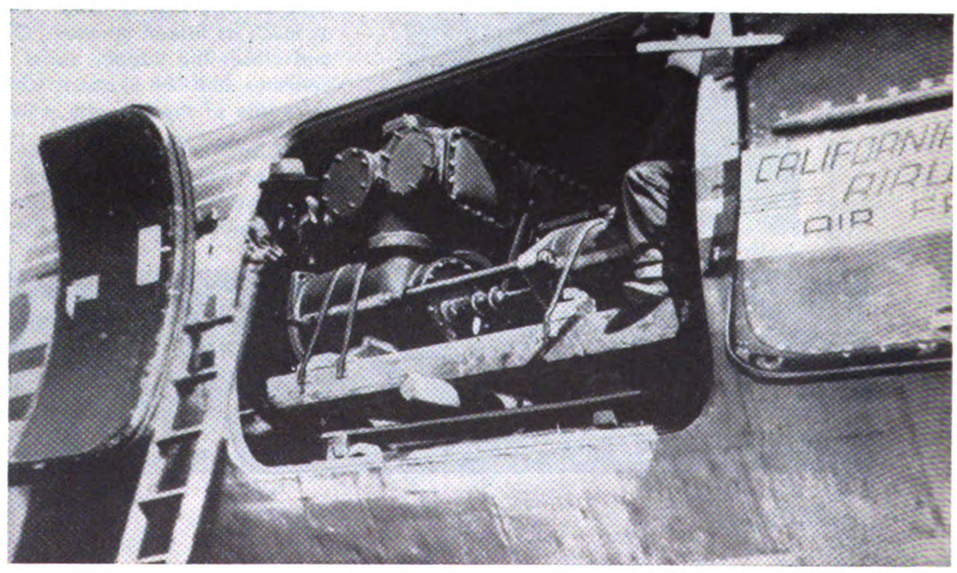
The shipment is said to be one of the heaviest concentrated weight loads ever carried by a commercial cargo plane.



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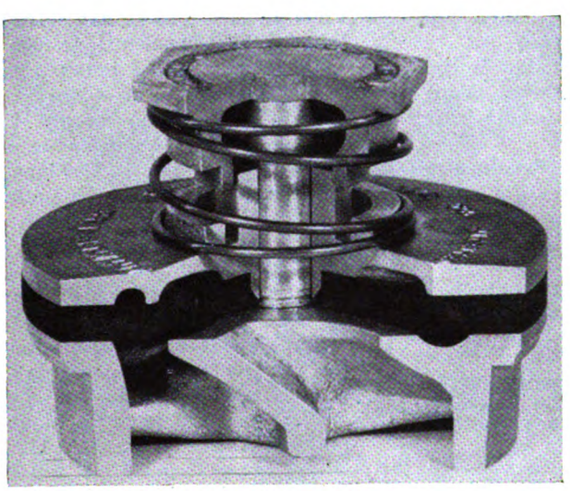

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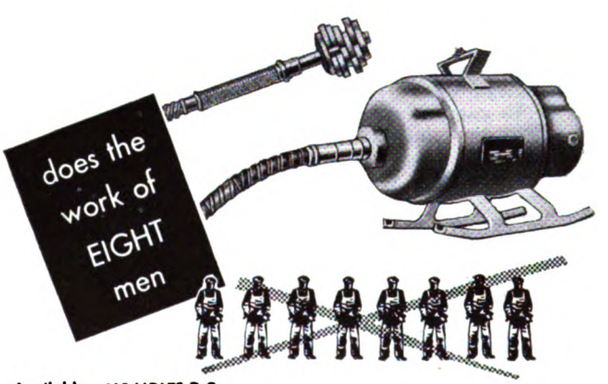

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Sperry Opens New Radar School in Seattle

Adding another unit to its long chain of Marine Navigational Equipment Schools, Sperry Gyroscope Company has recently opened a new Radar School in Seattle, Washington. The Sperry Marine Navigational Equipment Schools have been operating continuously for nearly thirty-five years, having been started in December, 1914. The school's records show that three generations of the same family now hold certificates, and in March, Sperry presented one of the graduates with the 29,000th certificate to be issued.

The new Radar School, known by its call letters as W7XTC, is used to train deck officers of vessels equipped with Sperry radar, and every week groups of experienced masters and officers from the difficult Alaskan trade routes learn how to put radar to advantage in fog-swept narrow passages.

Enrollment in the school is limited to deck officers. Due to space and the intensive training course, classes are limited to eight. The course lasts for five days, eight hours per day, beginning each Monday, and covers a thorough training in operation of the Sperry radar, with special emphasis on interpretation of scope patterns and the use of radar as a navigational aid to support the Rules of the Road. In addition, each student is carefully instructed in shipboard maintenance of the equipment.

The long waiting list of officers for this new Sperry school attests to its immediate success. Because of its location and its duplication of the average ship's installation, equipment is used for demonstration purposes for prospective purchasers of the Sperry equipment. Periodic "open house" sessions permit those interested in the school but not attending it to view its operation.

In accordance with Sperry's standing policy, there is no charge for attending the school. Applicants for the Seattle school should address inquiries to Sperry's Northwestern District Office, 2331 Seventh Avenue, Seattle, Washington. For lines operating from Eastern ports, the Sperry Radar School is located atop the Seamen's Church Institute, 25 South Street, New York, N.Y. Candidates for training at this address should address further inquiry to Sperry's New York District Office, 81 Willoughby Street, Brooklyn 1, New York.

Currently sailing out of North Pacific ports are 19 large commercial vessels equipped with Sperry radar, including five of the fleet of the Pacific-Atlantic Steamship Company, Portland; 12 vessels of the Alaska Steamship Company, and two Northland Transportation Company ships. The Pacific-Atlantic vessels are also equipped with Sperry loran sets.

In connection with those installations excerpts from the radar log of the ss ALEUTIAN are interesting.

Voyage No. 10—ss ALEUTIAN

Dec. 13—Left Seattle—Radar operating and functioning properly.

Dec. 14—Radar very useful today. Estimated that radar saved 11 hours running time in fog and thick mist.

Dec. 15—Arrived Ketchikan. Radar in continuous operation except when alongside dock. Weather cloudy—poor visibility, excellent results.

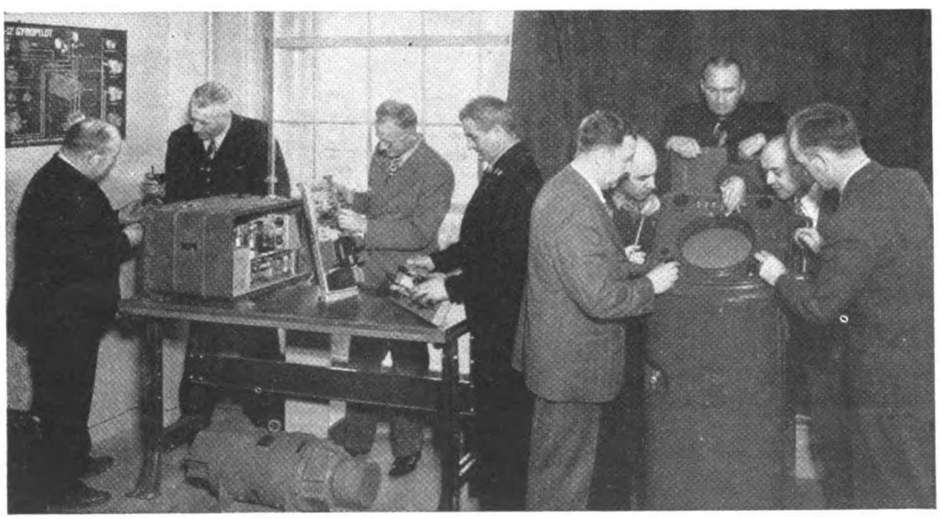
Dec. 16—Arrived Juneau, radar in continuous operation except when alongside docks. Thick snow, results better than in rain.

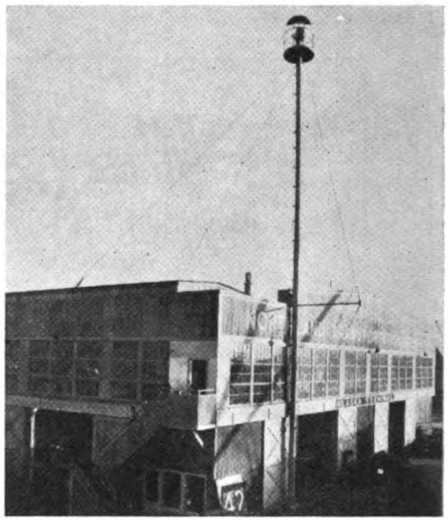
Dec. 17—To gulf of Alaska. Results same as for Dec. 16.

Dec. 18—Arrived Seward. Poor visibility. Radar especially valuable in finding distances.

Dec. 19—Seward — Valdez — Cordova. Same as on the 18th except for snow squalls.

SEATTLE SPERRY RADAR SCHOOL . . . Class No. 1, left to right: CAPTAIN A. W. NORDSTROM, CAPTAIN A. DANIELSON; CAPTAIN THROND THRONDSEN; CAPTAIN ELIAS JOHNSON; CAPTAIN C. N. GOODWIN; CAPTAIN P. R. SELIG; CAPTAIN M. R. PARKS; CHESTER KODERA, Instructor; CAPTAIN M. D. STEWART. All captains employed by Alaska Steamship Company.





RADAR SCANNER . . . Sperry Gyroscope Company's new Radar School in Seattle.

Dec. 20—Materially assisted off Cape Hinchenbrook and Cape St. Elias in most severe northeasterly gale with visibility nil.

Dec. 21—Materially assisted off Cape Spencer.

Dec. 22—Continuous operation—poor to nil visibility.

Dec. 23—Continuous operation—poor to nil visibility.

Dec. 24—Arriving Seattle in pea-soup fog. Radar most useful in well executed landing and traffic. Visibility 40 yards. Total radar operating time—917 hours.

Voyage No. 11—ss ALEUTIAN

Dec. 27—Leaving Seattle in mist and rain. Radar meter 917.1 hours.

Dec. 29—Snow starts—Tongass Narrows.

Dec. 30—Picked up several icebergs 5 miles ahead. Approximate size — 10 feet above water, 75 feet long. Smaller pieces picked up at 2½ miles.

Dec. 31—Picked up Middleton Island at 18 miles. Very heavy snow.
(NOTE: Because of heavy snow D.F. bearing not reliable; however, with accurate position by radar there was no doubt about the ship's position.)

Jan. 2—Radar indispensable in thick snow, saving at least two hours delay. Ship's position never in doubt.

Jan. 7—Arrived Seattle. 1120.3 radar hours.

One Alaska skipper has summed up his conclusions with the comment: "With radar installed every day is 24 hours of sunshine so far as navigating the ship is concerned, even though there be darkness and all kinds of fog and rain." And G. W. Skinner, president, Alaska Steamship Company has stated: "The value of this equipment is being demonstrated in the Alaska run where radar vessels are consistently saving at least one day for every round voyage."

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Manly S. Harris has moved his San Francisco stowing, crating and recoopering business from 1125 Steiner Street to the bulkhead on Pier 18 on the Embarcadero in the building formerly occupied by the Mitchell Stevedoring Company.

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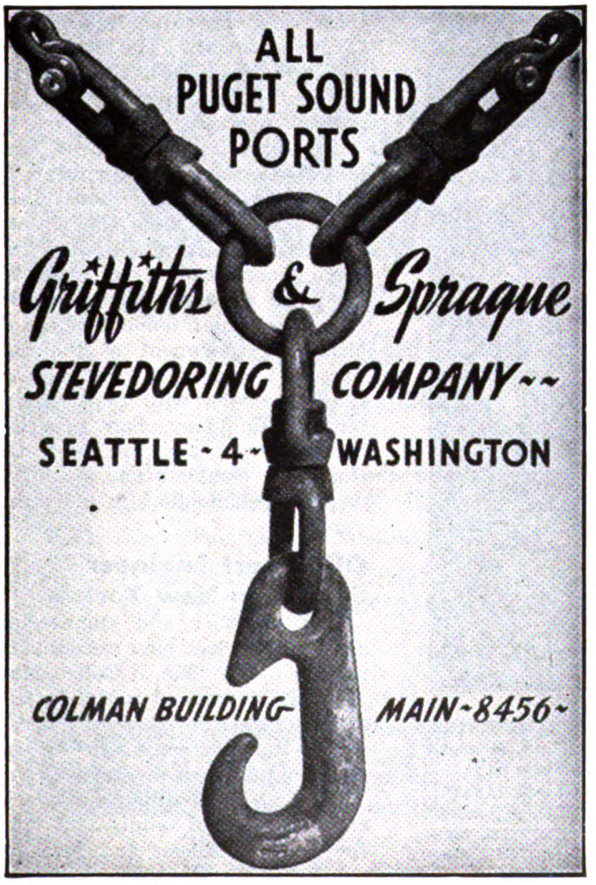

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SEASIDE SUPPLY Stores, Inc., maintains display floor and three warehouses at 803 S. Palos Verdes Street, San Pedro. ROLF SANNES, left, Secretary-Manager, and EINAR RICHTER, right, Vice President and Sales Manager, handle the MacWhyte line of wire rope along with other deck and engine room supplies.

Seaside Supply Specializes In Deck and Engine Room Supplies

Deck and engine room supplies constitute the specialty of Seaside Supply Stores, Inc., 803 S. Palos Verdes Street, San Pedro, under management of Rolf Sannes, secretary-manager, and Einar Richter, vice president and sales manager. The firm covers the southern California waterfronts from San Diego to Port Hueneme, with sales and service on a number of lines.

Principals included in the Seaside roster are: International Marine Paints, Great Western Cordage manila rope, MacWhyte wire rope, Plomb Tools, U. S. Rubber boots and clothing, Adams netting.

OXI MEN . . . left to right: LEIF HANSEN, International Ship Cleaners, San Francisco, GEORGE F. WALTERS, President of Oxi, and ERIC STENSTROM, International; CHARLES I. JACKSON, new Pacific Coast representative for Oxi.

NORTH PACIFIC SALES DIVISION PERSONNEL OF FAIRBANKS, MORSE AND COMPANY CONFER IN SEATTLE. Meeting with the group were T. M. ROBIE, Manager General Diesel Sales, Chicago, and M. GERIN, Manager, Engine, Electrical and Pump Sales, Canadian Fairbanks, Morse and Company headquarters, Montreal.

Left to right, standing: C. E. McDANIEL, Superintendent, Engine Shop, Seattle branch; PHIL GORANSON, General Line Sales north of Seattle; C. M. MULL, Alaskan Representative; TOM BULLOCK, Manager, Marine Engine Sales, Seattle; MR. GERIN; WILBUR WRIGHT, Engine Sales, Vancouver, B.C.; HOWARD OXSEN, Manager, Portland and Seattle branches; P. McGARVIE, Branch Manager, Vancouver, B.C.; W. J. McINTOSH, Manager, Diesel Engine Sales, Portland and Seattle branches.

Seated left to right: ROY BENSON, General Line and Marine Engine Sales south of Seattle; JOHN SIDERFIN, Engine Sales, Victoria, B.C.; MR. ROBIE; R. D. (BOB) WELLS, Industrial Sales, Seattle area; E. S. (Sandy) CRANE, Railroad and General Sales, Seattle and Tacoma. While in the North Pacific Mr. Robie inspected the newly located and modern equipped offices and machine shops at Seattle and Portland.

President of the corporation is W. McIlwaine, who also is owner of the McIlwaine Canvas Co., 247 West 6th St., San Pedro.

Under management of Sannes and Richter, Seaside Supply does business with foreign ships calling at southern California ports. In addition, the fishermen running in and out of local harbors are a market for netting, which department is managed by V. deLuca. Galley equipment for large and small vessels accounts for a portion of the sales-service business which maintains complete stocks on its showroom floor and three warehouses accompanying the main offices.

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Walters of Oxi Corp. Confers With Pacific Coast Reps

New Pacific Coast manager for the Oxi Corporation, Gary, Indiana, is Charles I. Jackson, Long Beach, Calif., formerly port engineer for the Hammond Shipping Company.

Mr. Jackson announces that stocks of Oxi crystals, for chemically cleaning the fireside of boilers, and Oxi's Oilrite, the firm's fuel oil treatment, are now carried by the Caraco Ship Supply Company, 1111 West Broadway, Long Beach, telephone Long Beach 722-61. Mr. Jackson's telephone is Long Beach 345-11.

George F. Walters, president of the Oxi Corporation, spent considerable time recently on the Pacific Coast conferring with his representatives and the many marine and industrial users of the Oxi products.

In San Francisco, the Oxi representatives now are the International Ship Cleaners, Inc., 863 Harrison Street, telephone Sutter 1-3293. Stocks of the crystals and Oilrite are carried by International.

The International firm is headed by Leif Hansen and Eric Stentrom, two former chief engineers, both well-known on the San Francisco waterfront.

Mr. Hansen spent eleven years at sea, was superintendent of the Maritime Chemical & Repair Company, Brooklyn, and later superintendent of the chemical cleaning department of the Harry W. Parsons Company in San Francisco. Recently he was with Sopac Ship Maintenance Company, San Francisco. Mr. Stenstrom was with the Moore Dry Dock Company, Oakland, and, during the war was a superintendent in that firm's shipyard.

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Offer Port Engineer Service in New York

Port engineer and engineering management services have recently been expanded by the firm of Colley-Maier, Inc., naval architects and consulting engineers, 25 West 43rd St., New York 18, according to an announcement by James F. French, president.

The staff handling surveys, repairs, conversions and equipment purchasing for both American and foreign steamship companies that do not maintain their own offices on the Atlantic Coast, has been enlarged to accommodate additional companies.

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NEW SOUTHERN CALIFORNIA HOME of International Paint and Sumco Products. Left to right: Office and warehouse building recently completed at 508 North Beacon Street, San Pedro, by International Marine Paint Agency, and ARTHUR PEGG, SR. head of the organization, and his son, ARTHUR PEGG, JR.

JOSEPH C. LANE, Northwest Representative for the DeBoom Paint Company, San Francisco.

JOINING the naval architect's and marine surveyor's staff of MORRIS GURALNICK, San Francisco, right, is REAR ADMIRAL HAROLD BIESEMEIER shown on the left.

De Boom Paint Representative Visits Firm's Home Plant

A recent visitor to San Francisco was Joseph C. Lane, Seattle, Pacific northwest representative for the De Boom Paint Company, San Francisco. He conferred with Claude R. Witzel, president, and Bob Harris, sales manager, regarding De Boom sales and service work on Puget Sound and spent considerable time with the De Boom chemists and in the firm's laboratories learning about the firm's latest developments with its Flagship Marine Paints.

In Alameda, Mr. Lane visited with Nick Lehman, yard superintendent at the United Engineering plant there, with whom he worked some thirty years ago.

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Sopac Reconverts Tankers In Gulf Ports

Sopac Ship Maintenance Company, San Francisco, has a large program of tanker reconversion under way in the Gulf ports of Beaumont and Mobile. Offices are maintained in these two cities and another office is contemplated for Norfolk, Virginia.

Jim Camp, new vice president and general manager of Sopac, recently returned from a visit to the Gulf. Mr. Camp is well-known in west coast maritime circles, where he has been engaged in ship maintenance activities for the past 21 years. He recently resigned as general manager and superintendent of Western Ship Service Company, San Francisco, to join Sopac.

George (Buck) Plant is president of Sopac, William Harris is sales manager, and A. W. Zipf went with Mr. Camp from Western to become manager of the firm's newly organized chemical cleaning division. He held the same post at Western.

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New Construction Awards to Commercial Ship Repair

Commercial Ship Repair, Seattle, are the successful bidders on a new 136 foot by 38 foot by 11 foot all steel gasoline and light oil barge for Washington Tug and Barge Company, Seattle. Compartmentized into 20 tanks and equipped with four pumps the barge will have capacity of 316,000 gallons.

Also awarded to Commercial Ship Repair early in April is a contract for construction of two steel tugs from the City of Seattle Light Department for use at the city power project on the Skagit River. Designed by Ed Monk, the tugs are 40 feet in length and are to be powered by Caterpillar Diesels, Model D 318-80. Approximately $150,000 in new construction is involved in the contracts.

Construction is being carried out at the Commercial Ship Repair, Winslow Division. Repair and conversion work under contract at Winslow includes work on the Coast Guard cutter KALAMA, at a cost of $23,000, and on the Bureau of Indian Affairs mv. NORTH STAR, at a cost of $24,000. Employment at Commercial Ship Repair has ranged from 150 to 500 men since the first of the year.

SOPAC CHIEFS: "BUCK" PLANT, left, President of Sopac; A. W. ZIPF, center, Manager of the Chemical Department and JIM CAMP, right, Vice President and General Manager.

HEADS OF Oceanic Trading Company: JOHN GAZZANO, FRANK HOWLAND, and SAM GAZZANO. Mr. Howland recently joined this San Francisco organization as manager of the foreign freight forwarding department.

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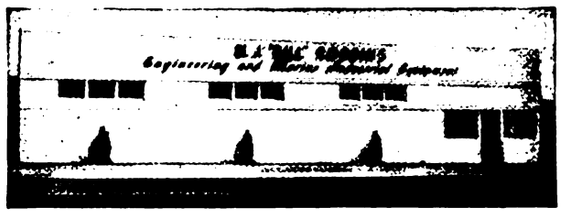

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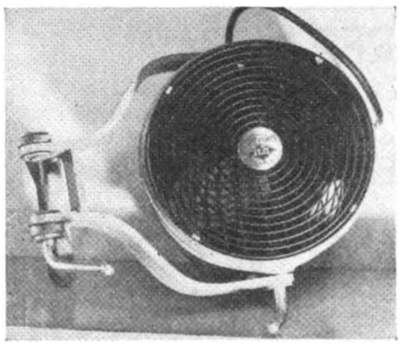

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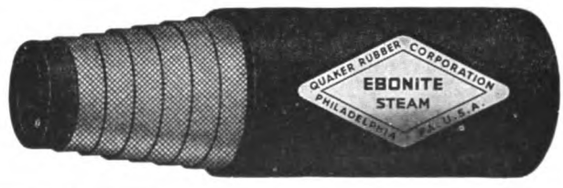

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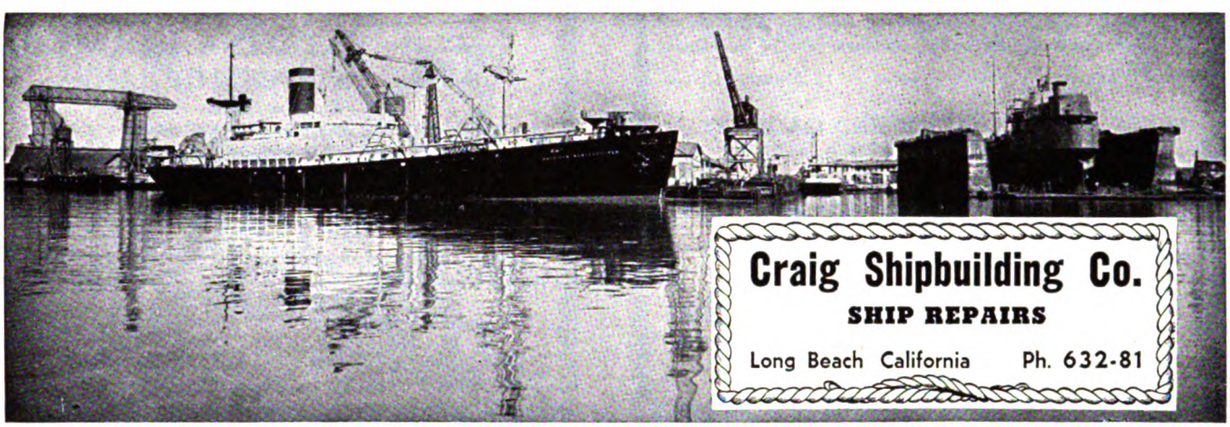

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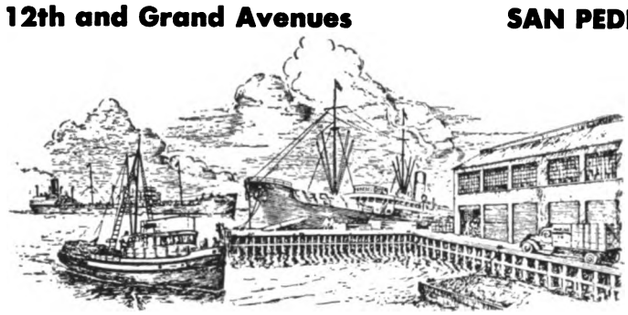

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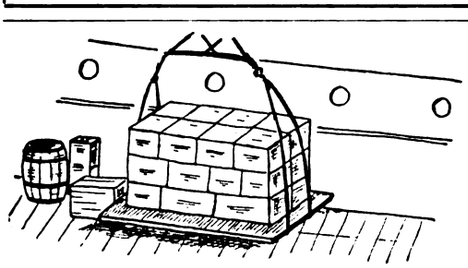

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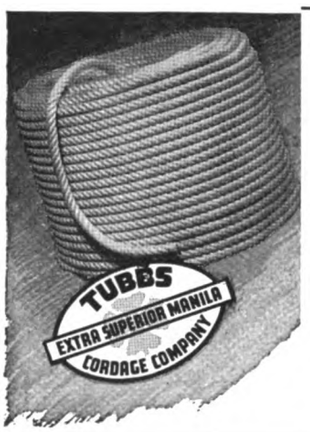

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ADVERTISERS INDEX

Aerial Products, Inc. 15
Albina Engine & Machine Works 51
Alcoa Steamship Co., Inc. 19
American Brass Company 71
American Mail Line 67
American President Lines 72
Arnessen Electric Co. 59
Asbestos Supply Companies 61
Baier & Associates, L. S. 72
Babcock & Wilcox Co. 21
Baker Dock Company 71
Bird-Archer Company of California 68
Bratsberg, Capt. A. J. H. 72
Catalina Island Steamship Line 68
Cavanaugh Machine Works 65
Central Maritime Contracting Co. 67
Columbia Machine Works 70
Combustion Engineering Company 22
Commercial Ship Repair 70
Cordes Brothers 71
Craig Shipbuilding Co. 67
The Curtis Bay Towing Co. ..... Inside back Cover
Dahl-Beck Electric Co. 66
Dampney Company of America, The 47
Dearborn Chemical Co. 69
Dee Engineering Co. 70
De Laval Steam Turbine Co., The 66
Dravis Engineering & Machine Works 69
Duke's Packing Co. 61
Everett Pacific Shipbuilding & Dry Dock Co. 63
Fairbanks, Morse & Co. 11
Fuller & Co., W. P. 2
General Electric Co. ..... 4 & 5
General Engineering & Dry Dock Co. 68
Gladding, McBean & Co. 72
Gow, Inc., Alexander 66
Green Fire Brick Co., A. P. 55
Griffiths & Sprague Stevedoring Co. 61
Guralnick, Morris 72
Hansen, H. C. 72
Harris, Manly S. 72
Hart & Burns, Inc. 53
Heuck Company, Ed 56
Hickman Engineering Co. 68
Hiller, Paul W. 72
Hough & Egbert Co. 68
International Paint Co., Inc. 43
Isherwood & Co., Ltd., Sir J. W. 71
Liquidometer Corp., The 63
Long Beach, Port of 57
Luce & Co. 48
Lukes Bros. Steamship Co., Inc. 63
Marine & Industrial Supplies & Service, Inc. 47
Marine & Industrial Supply, Inc. 72
Marine Marketing Co. 66
Marine Service, Inc. 70
Maritime Engineering 71
Moore & Co., C. C., Engineers 21
Moore-McCormack Lines 48
Morrison & Bevilockway 71
National Malleable & Steel Castings Co. 10
Norberg Manufacturing Co. ..... Front Cover & 3
Northwest Marine Iron Works 65
Nystrom, E. W. 72
O'Donnell Copper Works, E. M. 72
Oxi Corporation 14
Pacific Marine Supply Co. 63
Perry, L. C. 72
Pilot Marine Corp. 61
Piver, Jack 72
Pope & Talbot Lines 56
Puget Sound Freight Lines 70
Quaker Pacific Rubber Co. 66
Radiomarine Corporation of America 17
Refractory Coatings Co. 61
Refrigeration Components 69
Republic Electric Co. 70
Robbins, W. J. "Bill" 69
Rothschild International Stevedoring Co. 72
Seaboard Machinery Corp. 40
Sea-Re Packing Co. 51
Seaside Supply Stores, Inc. 69
Seattle Marine Surveyors 71
Seattle, Port of 53
Shell Oil Co., Inc. 7
Sherwin-Williams Co. 8
Sims Pump Valve Co., Inc. 59
Socony-Vacuum Oil Co., Inc. ..... Inside Front Cover
Sopac Ship Maintenance Co. 24
Sperry Gyroscope Co., Inc. 23
Standard Distributing Co. 57
Standard Oil Company of Calif. 13
Submarine Signal Co. 6
Sumco Products, Inc. 70
Sweetin Co., J. L. 71
Swett & Co., George E. 65
The Texas Co. ..... Outside Back Cover
Thompson Co., J. Paul 72
Thorpe & Son, Inc., J. T. 71
Todd Shipyards Corp. 9
Toumey Electric Engineering Co. 67
Tubbs Cordage Co. 70
United Engineering Co., Inc. 1
United Fruit Co. 12
Western Asbestos Co. 65
Western Machinery Corp. 59
Westinghouse Electric Corp. 36, 37
Wilmington Engineering Service Co. 71
Winter Co., E. V. 59
Woodlawn Flower Shop 71

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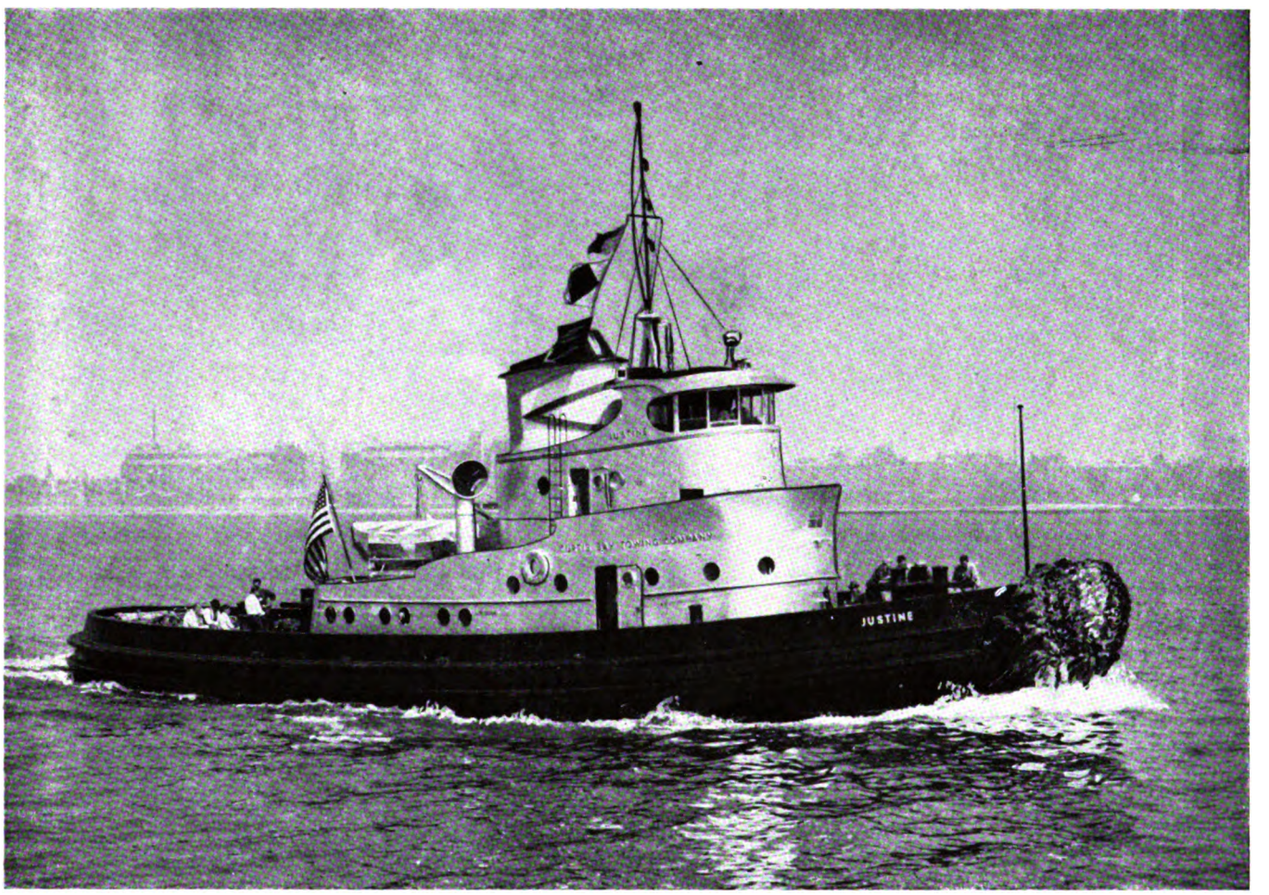

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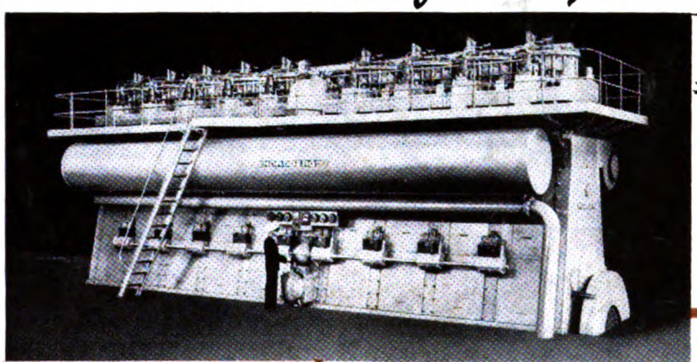

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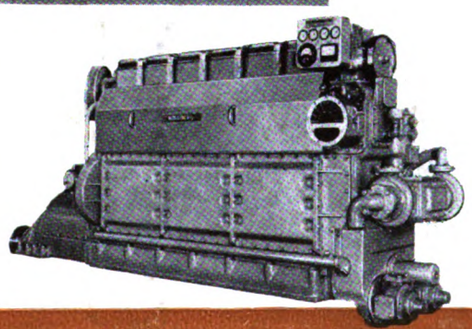
See Page 3



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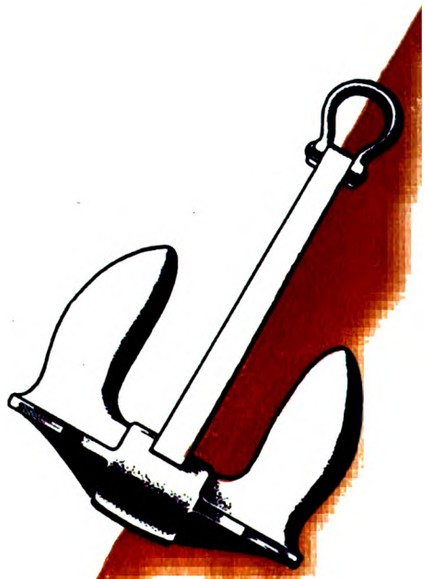

JUNE 1948
Volume 43 • Number 6

EDITORIAL INDEX ON PAGE..35
ADVERTISERS' INDEX ON PAGE 80

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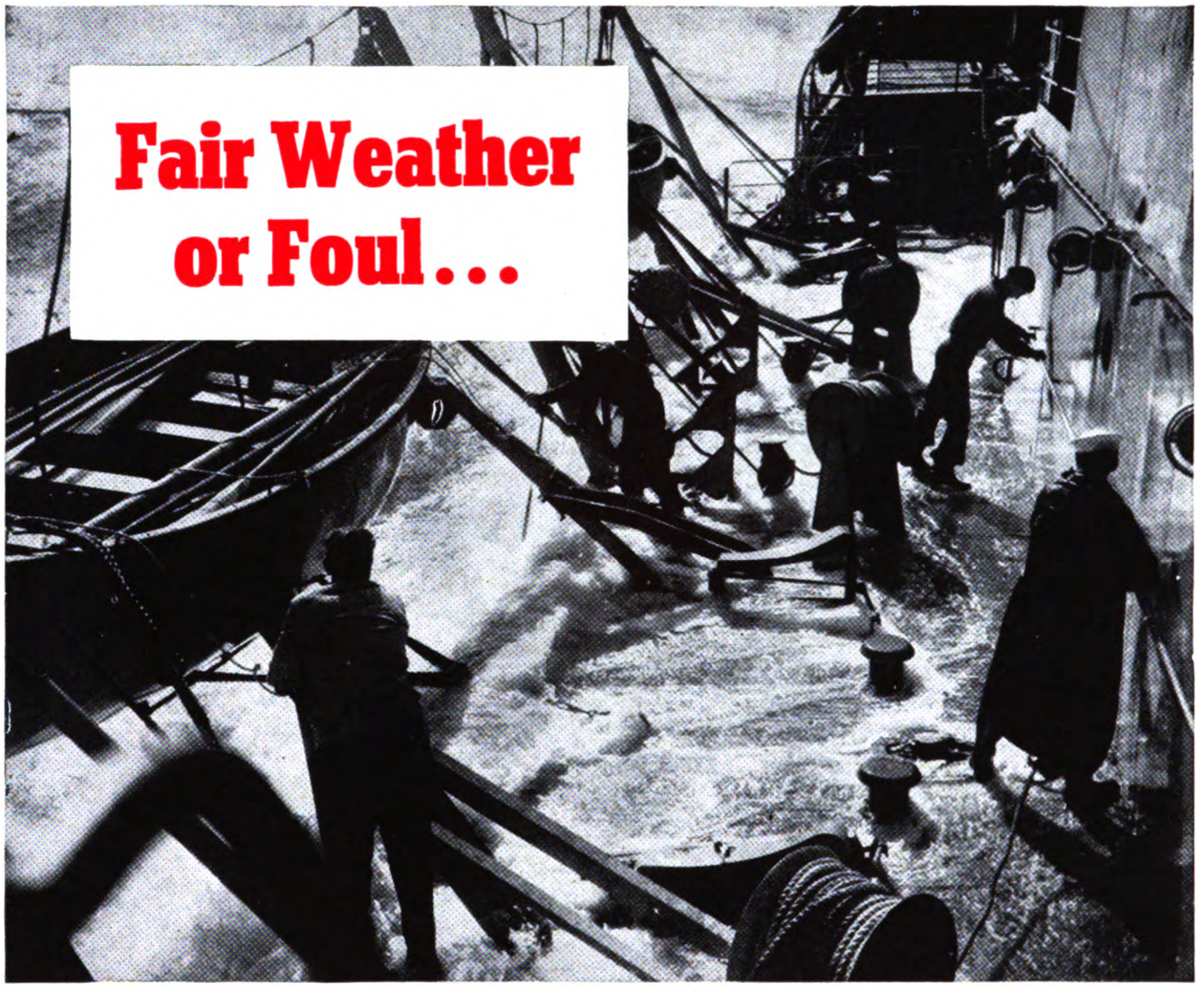

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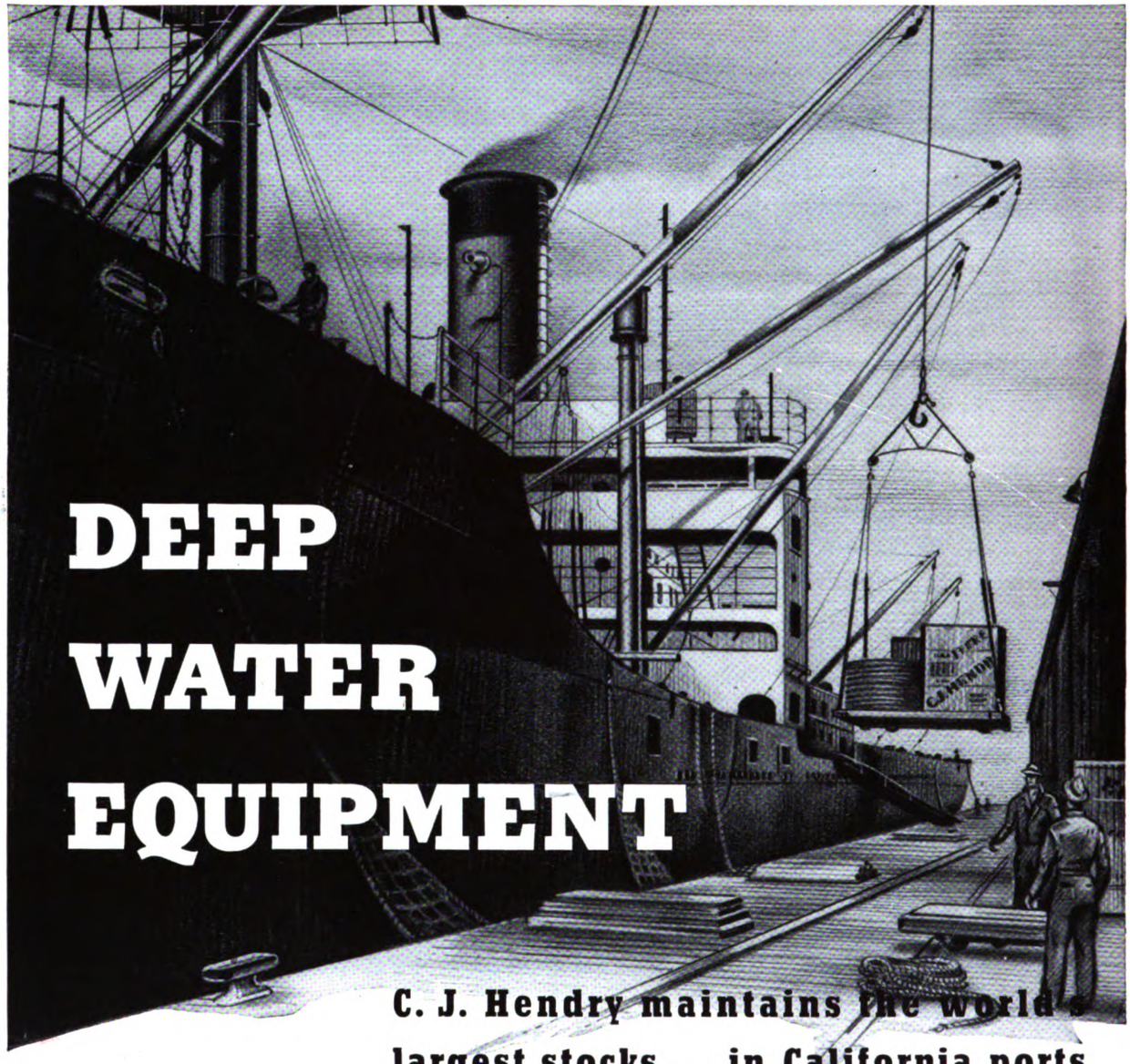

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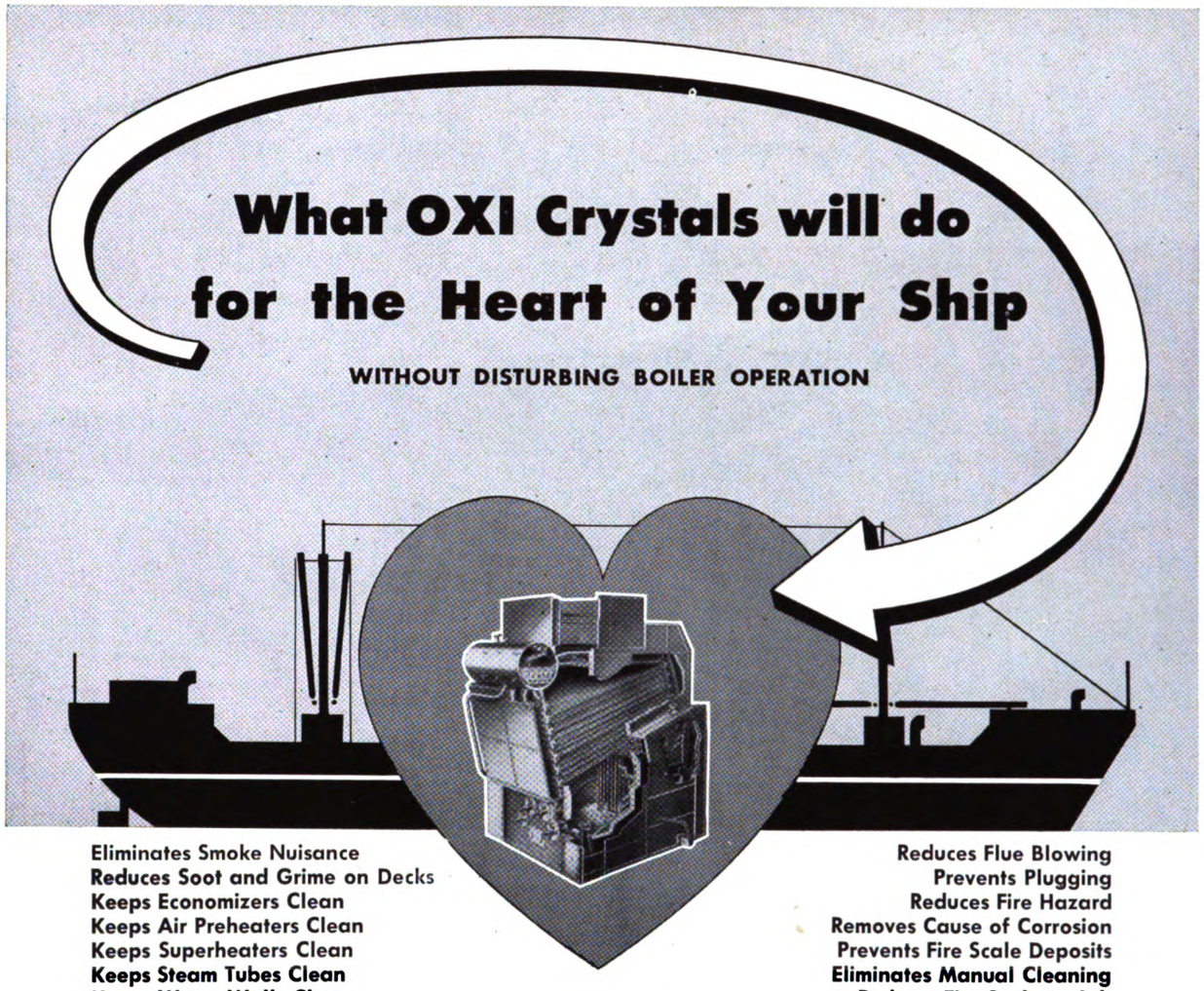

Eliminates Smoke Nuisance
Reduces Soot and Grime on Decks
Keeps Economizers Clean
Keeps Air Preheaters Clean
Keeps Superheaters Clean
Keeps Steam Tubes Clean
Keeps Water Walls Clean

Reduces Flue Blowing
Prevents Plugging
Reduces Fire Hazard
Removes Cause of Corrosion
Prevents Fire Scale Deposits
Eliminates Manual Cleaning
Reduces Fire Scale to Ash

CHEMICALLY CLEANS THE ENTIRE FIRESIDE OF BOILERS

FREE OXI SERVICE

At your request and without cost or obligation, one of our qualified trained engineers will inspect your boilers when in port, and submit to you a written report regarding the results that can be obtained with the Oxi Chemical Process. He will make the initial application and instruct your operating engineers in the most effective method to get maximum results in your boiler. He will then inspect your boilers periodically and submit reports of progress.

Consult an Oxi Field Engineer—now available at major ports—or write our General Office for further information.

FREE OXI MARINE SERVICE IS AS NEAR AS YOUR TELEPHONE

NEW YORK CITY, Watkins 9-7219
BAYONNE, N. J., 3-1432
PHILADELPHIA, PA., Howard 8-5700
Howard 2-5000
Newton Square 0640
BALTIMORE, MD., Wolfe 9655
NEWPORT NEWS, VA., 4-1784
NORFOLK, VA., 2-5966
MOBILE, ALA., 3-2127

OXI CRYSTALS

NEW ORLEANS, LA., Canal 6151
HOUSTON, TEX., Woodcrest 6-8351
Wentworth 3-6387
PORT ARTHUR, TEX., 2-9447
GALVESTON, TEX., 2-3039
LONG BEACH, CALIF., LB 3-4511
LONG BEACH, CALIF., LB 7-2261
SAN FRANCISCO, CALIF., Sutter 1-3293
PORTLAND, OREGON, Broadway 2561
SEATTLE, WASH., ELiot 4262, MAin 8101

OXI CORPORATION, GARY, INDIANA

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See **SEABOARD** *for*

Quick Opening

Watertight

HATCH COVERS

Save costly days in port due to time spent opening and closing hatchcovers each morning and night.

Save on costly damage in storms because Seaboard Mege Quick-opening Hatch-covers are rain tight in 2 to 3 minutes.

SEABOARD MACHINERY CORP.

29 Broadway . . . New York 6, N. Y.

Pacific Coast Representative: CONSOLIDATED SERVICES, INC.
71 COLUMBIA ST., SEATTLE, WASH.

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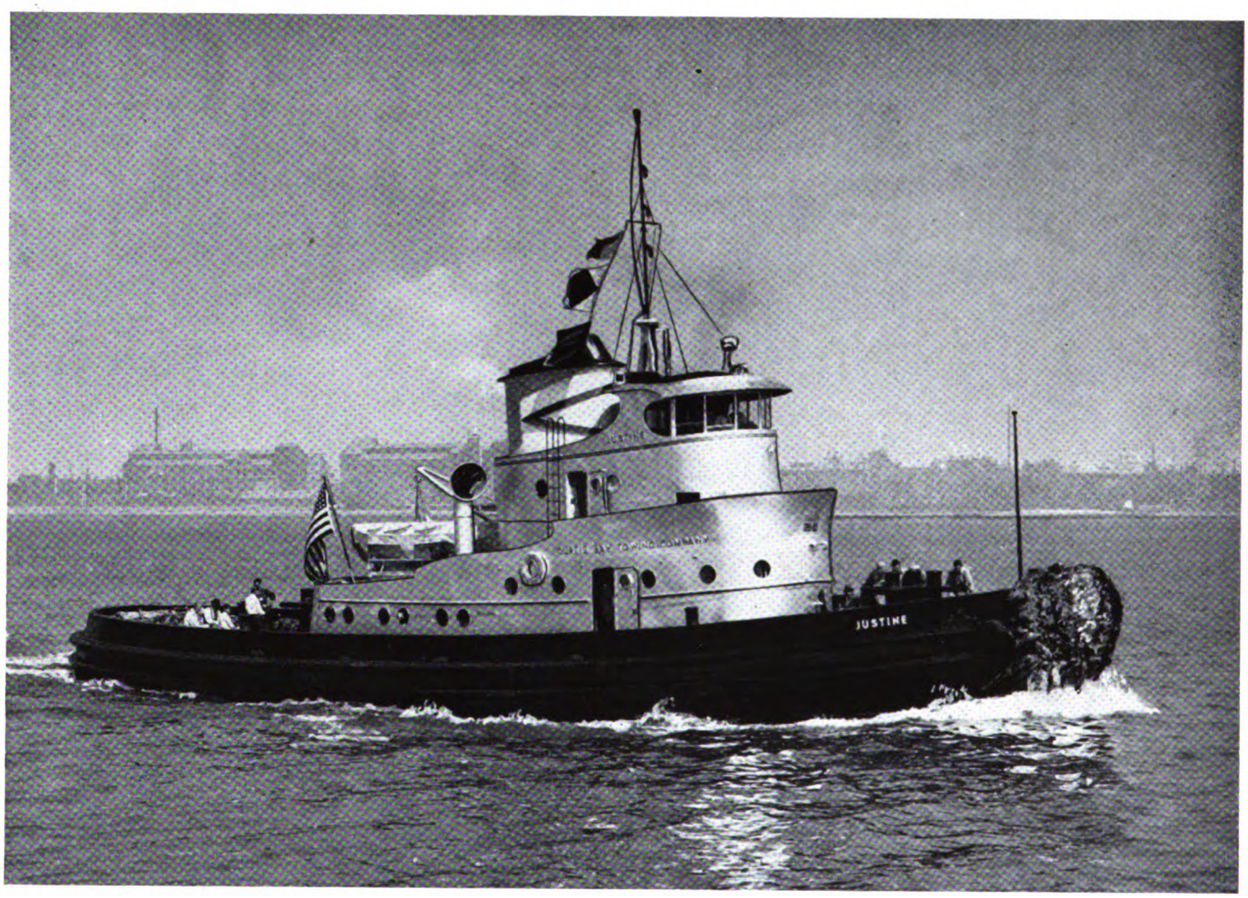
THE CURTIS BAY TOWING Co.

1501 MERCANTILE TRUST BLDG.

BALTIMORE 2, MARYLAND

PHONE: CALVERT 4400 CABLE AND RADIO: "CURTISBACO"



THE CURTIS BAY TOWING Co.

OF PENNSYLVANIA

12 SOUTH TWELFTH ST.

PHILADELPHIA 7, PA.

PHONE: LOMBARD 3-3977 CABLE AND RADIO: "CURTISBACO"

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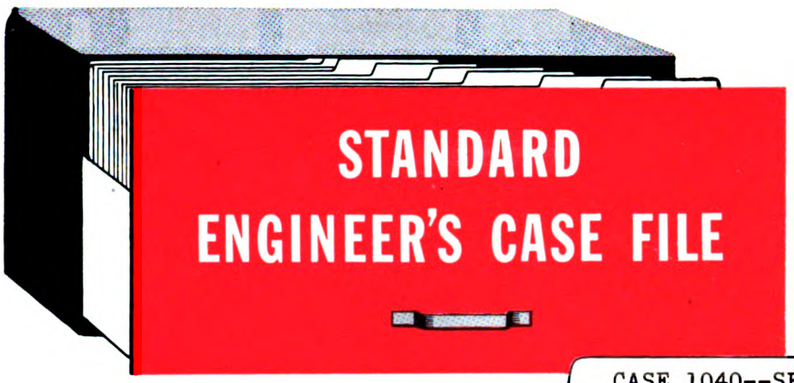
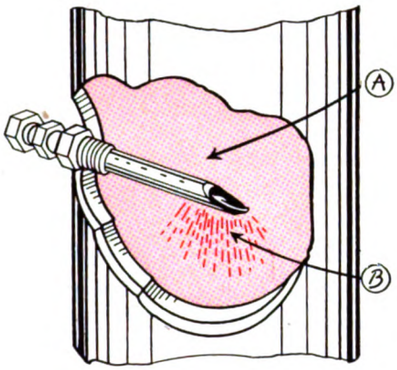


CASE 1040--SECURING SAFE LUBRICATION IN STEAM ENGINES IN WIDE RANGE OF CONDITIONS.



LUBRICANT ATOMIZING QUILL

Compounded Calol Cylinder Oil — 155PX provided adequate lubrication with freedom from carbon in various steam engines operating with temperatures from 375° F. to 550° F. Made from 100% Pennsylvania steam cylinder oils and special acidless tallow oil. Medium viscosity grade.

A. Economical in steam conditions from saturated to moderate superheat.

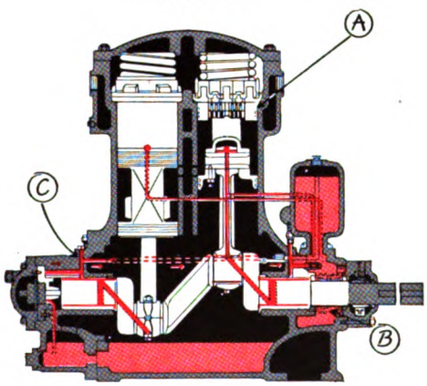
B. Atomizes readily in steam.

Calol Cylinder Oil — 155PX will separate easily from exhaust steam and condensate where adequate oil separators and skimming equipment are installed.

Calol Cylinder Oil — 155PX is one of a complete line of steam cylinder and valve oils produced by Standard of California.

CASE 1044--SECURING LONGER SERVICE FROM LUBRICANT IN REFRIGERATOR COMPRESSORS.

REFRIGERATOR COMPRESSOR WITH FORCE-FEED OILING SYSTEM



Highly stable Calol Ice Machine Oils provided outstanding lubrication and met all other conditions in different compressors where all types of refrigerants were used. They separated rapidly from water. Come in five grades: 9 and 11 are recommended for ammonia compressors, 14 for carbon dioxide machines and centrifugal units using Carene, Freon, etc., and some ammonia compressors, and 10W and 13W for household refrigerators requiring colorless, odorless oils.

A. Will not form injurious deposits .. will stick on bearing surfaces, reduce wear and maintain good piston-ring seal.

B. Assure efficient seal in stuffing boxes.

C. Have extremely low pour points - circulate freely ... drain readily from coils and condensers.

Calol Ice Machine Oils are fully dehydrated and have high di-electric strength.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20, California.

RPM CALOL

FOR EVERY NEED A **STANDARD OF CALIFORNIA** JOB-PROVED PRODUCT

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LIBERTY SHIPS ARE CUTTING FUEL COSTS WITH

HAGAN

AUTOMATIC COMBUSTION CONTROL

Our engineers will be glad to give you full information . . . HAGAN CORPORATION, Hagan Building, Pittsburgh 30, Pa.

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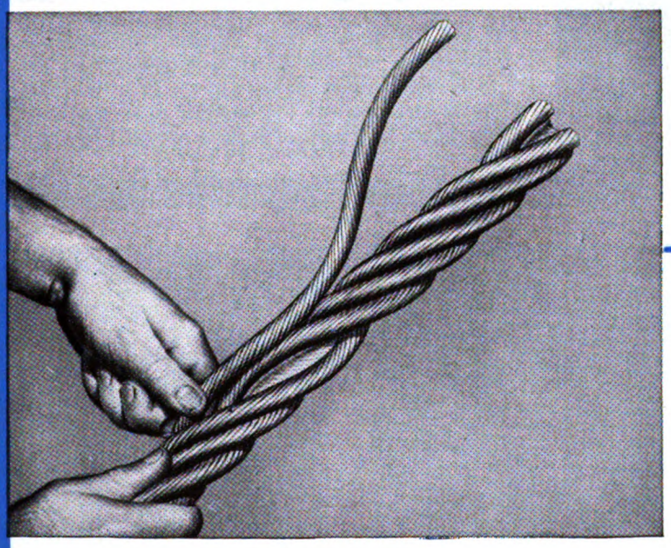
Confidence—WITH ITS SLEEVES ROLLED UP!



ATOP THE WORLD'S TALLEST BUILDING . . . yet not high enough! Television's need for unobstructed, long-range broadcasts may be met by planes in the stratosphere, relaying signals from the earth. Engineers working on this problem are confident of ultimate success.

With like confidence, Roebling blazes new trails in developing and making products vital to communication and all other industries. And the widespread confidence reposed in Roebling is our most guarded asset. Leadership is maintained only by constant progress . . . our ideal is to make Roebling products and engineering service the best obtainable anywhere, *any* time.

WHEN TO SPECIFY ROEBLING *Preformed* WIRE ROPE

WHEN IT WILL SAVE YOU MONEY is the time to specify Roebling Preformed Wire Rope. Wherever wire rope is subjected to severe bending, Roebling Preformed is an outstanding money-saver. On thousands of installations it lasts far longer than Non-Preformed ropes . . . pulls down performance costs to an all-time low.

Great resistance to fatigue from bending helps give Roebling Preformed a long life, but you can chalk up other big advantages. Preformed is not inclined to twist and kink . . . is easy to handle and install. It can be cut without seizing. Broken wires lie flat . . . don't injure hands or chew up drums and sheaves.

Get your Roebling Field Man's advice about Preformed and the possibility of its saving you money. You can act on his suggestions with full confidence for he *knows* wire rope, how to choose the *right* one, how to maintain it for top service. Write or call him at your nearest Roebling branch office.

JOHN A. ROEBLING'S SONS COMPANY
OF CALIFORNIA
San Francisco Los Angeles Seattle Portland

A CENTURY OF CONFIDENCE ROEBLING

★ *WIRE ROPE AND STRAND* ★ *FITTINGS* ★ *SLINGS* ★ *SUSPENSION BRIDGES AND CABLES* ★ *AIRCORD, AIRCORD TERMINALS AND AIR CONTROLS* ★ *AERIAL WIRE ROPE SYSTEMS* ★ *ELECTRICAL WIRE AND CABLE* ★ *SKI LIFTS* ★ *HARD, ANNEALED OR TEMPERED HIGH AND LOW CARBON FINE AND SPECIALTY WIRE, FLAT WIRE, COLD ROLLED STRIP AND COLD ROLLED SPRING STEEL* ★ *SCREEN, HARDWARE AND INDUSTRIAL WIRE CLOTH* ★ *LAWN MOWERS*

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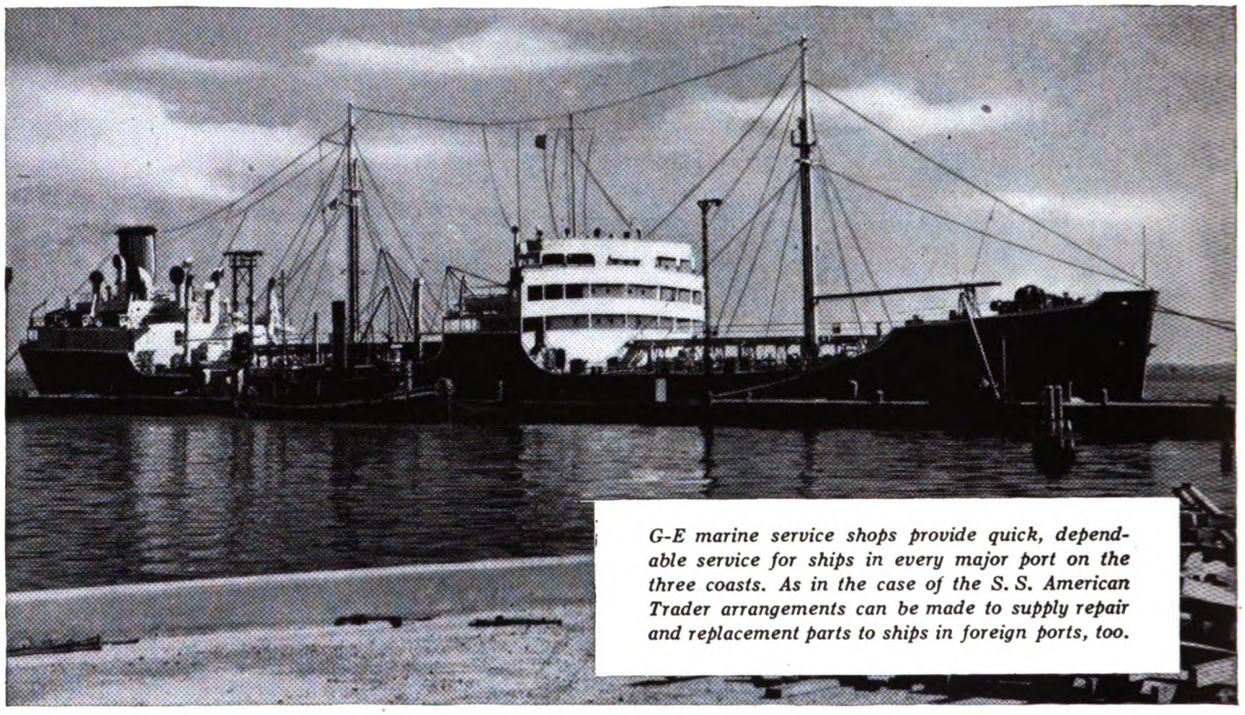
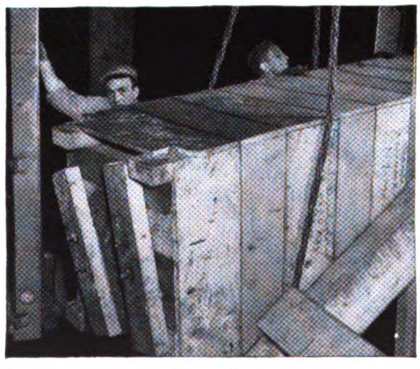
3½ TON ROTOR HOPS TO SAVE OPERATOR



G-E marine service shops provide quick, dependable service for ships in every major port on the three coasts. As in the case of the S. S. American Trader arrangements can be made to supply repair and replacement parts to ships in foreign ports, too.



Million-dollar stocks of marine parts are maintained in G-E warehouses. Here, a replacement rotor for the American Trader is loaded on a truck at the N. Y. service shop.

After careful crating, the ship's rotor is loaded aboard a waiting American Overseas Airline transport plane at LaGuardia Airport.

This American Overseas Airlines plane helped deliver the replacement to the S. S. American Trader in only 48 hours. It was the heaviest piece of freight that has ever flown the Atlantic.

GENERAL ELECTRIC

200-65

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ATLANTIC OVERNIGHT

7 DAYS PORT TIME

G-E Service Shop rushes vital part to England via air express to save thousands of dollars for operators of S.S. American Trader

Here's an unusual story of how a G-E marine service shop helped to cut port time for a vessel stranded 4,000 miles away! Last August 4th the New York office of the American Trading & Production Corp. received a transatlantic telephone call from the captain of their ship, the S. S. *American Trader* (ex-*Marne*). The rotor of his main generator was damaged beyond repair. No replacement was available—the nearest one was in the United States. Could it be flown to London immediately? In Hoboken the operator had a spare rotor placed on a truck bound for LaGuardia Airport. Then the bad "break" came!

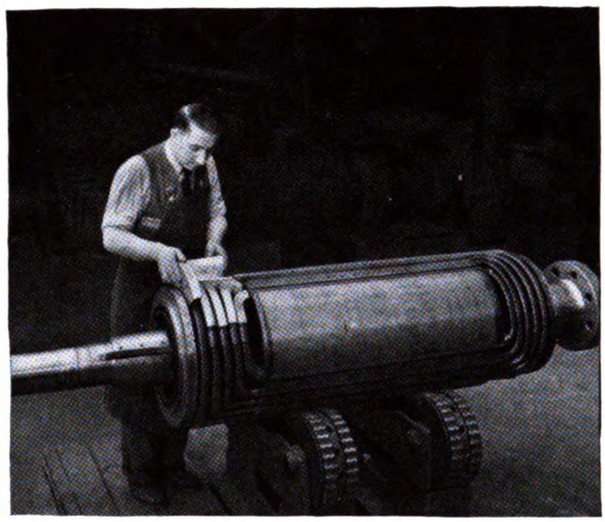
Rotor breaks loose!

Two miles from the airport, the rotor ripped loose from its moorings and fell from the truck. Immediately, a G-E marine engineer was called to the scene to determine the extent of damage. The rotor had to be taken into G-E's New York service shop for repairs requiring at least seven days. And the ship was counting on a replacement within forty-eight hours!

Arrives on time!

In this emergency the G-E service shop came through with an identical rotor. It was tested in eight hours instead of the usual 16 and rushed to the airport. Forty-eight hours later, it was being lowered into the engine room of the *American Trader*. On the next day, it passed dock trials successfully and the ship was ready to sail with thousands of dollars of port time saved.

Saving the owner port time has become a habit with G-E marine service shops. That's because these shops are backed by the shipping industry's most complete marine service organization. We'd like to tell you more about it . . . about the million-dollar warehouse stocks of replacement parts located in New York and San Francisco and how these warehouses can supply everything from a turbine rotor to a voltmeter (in 24 hours if necessary). We'd also like to tell you about G-E's 18 marine service shops, located in every major coast and inland port and staffed with competent marine engineers and service technicians. The whole story is in our new bulletin entitled "When Your Ship Comes In . . . ". Send for your free copy today. Address: General Electric Company, Sec. AI-4693, 1 River Road, Schenectady 5, N. Y.



A skilled technician places aluminum saddles on the end windings of a turbine-generator's revolving field. In General Electric's 18 marine service shops technicians are trained to speed repairs, thereby cutting port time and saving money for the owner.

KEEP 'EM SAILING **SERVICE**

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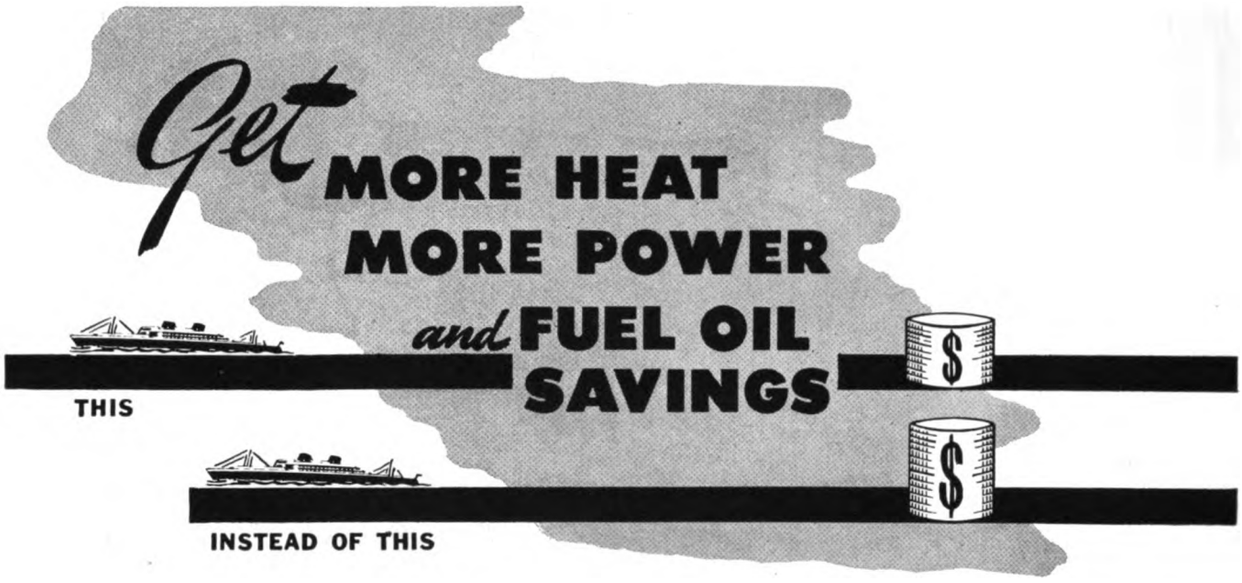

The following is an actual case and is typical of many vessels on which fuel oil costs have been reduced and power plant efficiency substantially increased through the use of Sumco FUELKLEEN.

Before Fuelkleen was used aboard this ship, the super-heat temperature was 700° F., due to carbon deposits within flue-gas passes. After Fuelkleen was used in the bunkers to eliminate foreign matter there, and in the lines and in the fuel itself, the temperature increased to 735° F. Shell steam pressure on the fuel heaters ran 50 lbs. before the use of Fuelkleen. After the application of Fuelkleen the steam pressure was reduced to 30 lbs.

The vastly improved atomization and Btu release of the oil showed a saving of seven (7) barrels of oil, per day. Over an operating period of 240 steaming days, the oil saving for this vessel amounted to 1680 barrels.

These facts should constitute convincing evidence to operators and engineers vitally concerned with fuel oil uniformity—those who are anxious at all times to obtain the maximum Btu's, burning efficiency, ease in oil handling and pumping, and low maintenance cost of equipment. Contact the Sumco Service Engineer in the port nearest you (see addresses below) for a demonstration of Fuelkleen's efficiency and economy. Get your copy of the Sumco Handbook immediately.

144 CENTRE STREET
BROOKLYN 31, N. Y.

Sumco PRODUCTS INC.

821 FOLSOM STREET
SAN FRANCISCO 7, CAL.

Manufacturers of FUELKLEEN • TUBEKLEEN • HEATERKLEEN • AQUAKLEEN • OILKLEEN • SUMCO SUDS

FUELKLEEN

REPRESENTATIVES: Power Engineering and Supply Co., 308 Prefontaine Bldg., Seattle 4, Washington; Arthur R. Pegg, 508 N. Beacon St., San Pedro, California; Harbor Supply Company, 821 Folsom Street, San Francisco 7, Cal.; Boiler & Engineering Service & Supply Co., 2211 N.W. Front Ave., Portland 9, Ore.; Galveston Ship Supply Co., 2102 Strand, Galveston, Texas; Galveston Ship Supply Co., 1521 Wayside, Houston, Texas; Gulf Coast Marine Supply Co., Northeast Corner, Royal and Monroe Streets, Mobile, Ala.; Interstate Sales and Supply Co., 429 Calliope St., New Orleans, La.; T. Roddy Lanigan Co., 342 S. W. North River Drive, Miami, Florida.

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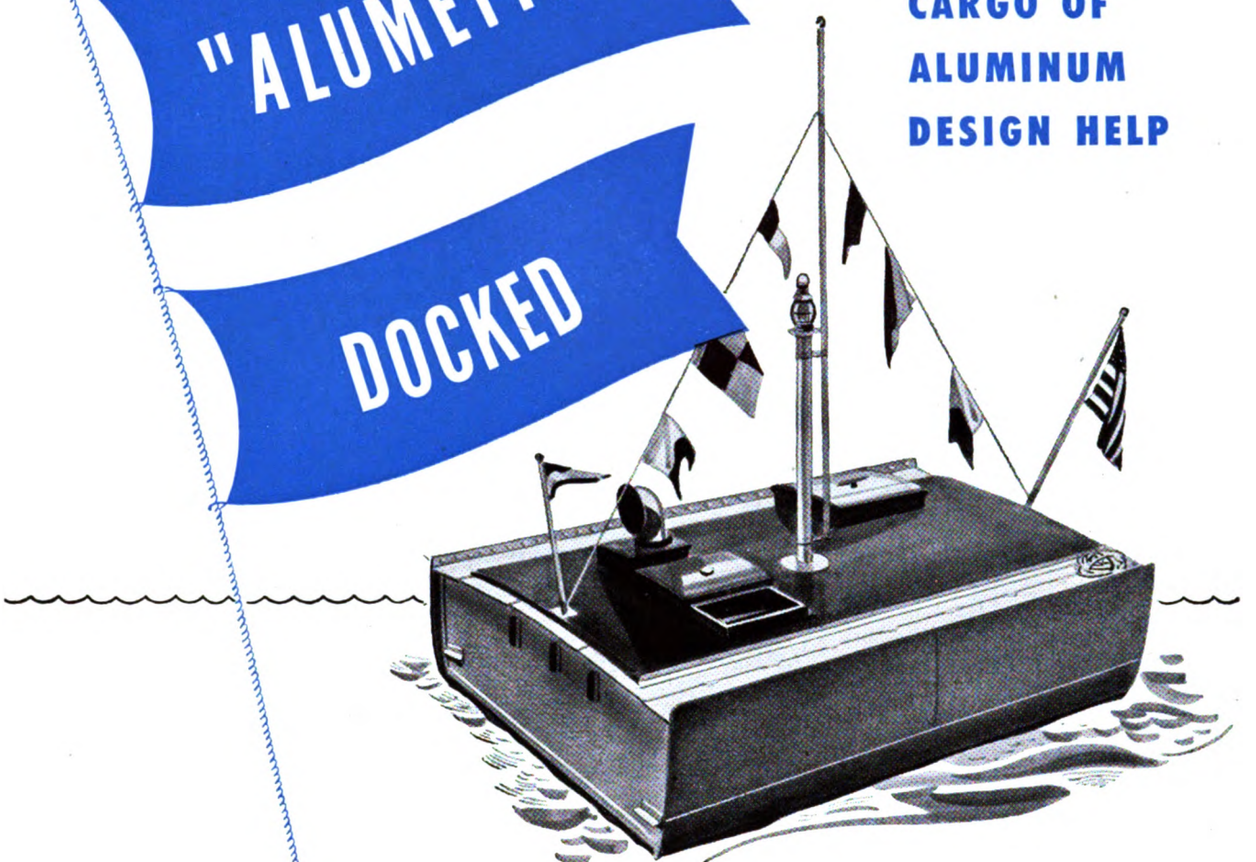
"ALUMETTE" DOCKED

WITH HER 16th CARGO OF ALUMINUM DESIGN HELP



She's never crossed the ocean—but the aluminum test hull, "Alumette", now on her sixteenth "voyage" in 12 years, has logged seagoing proof of Alcoa Aluminum Alloys' seaworthiness.

Designed by the late W. Starling Burgess and built with regular shipyard equipment, the "Alumette" has demonstrated structural integrity and earned her blue ribbons since she was "launched" at Bath Iron Works in December, 1935.

"Alumette" has been docked in the sea waters of the outfitting basins of Newport News Shipbuilding and Dry Dock Company since January, 1936, to simulate "in service" conditions. In that time, corrosion attack on the aluminum hull has been proved negligible and the utility of Alcoa Aluminum Alloys for ship hulls definitely established.

Periodically inspected, with the co-operation of the shipyard, and painted, using standard painting systems, including anti-fouling compositions, the "Alumette" will be used principally in the testing of new paints and systems until 20 years old.

Alcoa Aluminum in hulls, superstructures, and equipment, will save weight for added carrying capacity, for improving stability, and for saving maintenance. Alcoa engineers will be glad to assist you with your designs. ALUMINUM COMPANY OF AMERICA, 1834 Gulf Building, Pittsburgh 19, Pa.

ALCOA FIRST IN ALUMINUM

ALCOA ALUMINUM 1888 1948 60 YEARS OF SERVICE

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...since the white ships came...

Starting nearly half a century ago to sail to Caribbean ports for tropical fruits, the ships of the Great White Fleet began to serve the mutually beneficial trade between Middle and North America.

To coordinate cargo movements efficiently the United Fruit Company pioneered the first ship-to-shore radio in the Caribbean—known today as Tropical Radio Telegraph Company.

Passenger traffic as well as cargoes steadily increased—citizens of Middle and North America both, learning to know each other better.

Agricultural experiments with such new crops as abaca (manila hemp), the insecticide, rotenone, and African palm oil are progressing. Today these new crops, as well as the traditional nutritious foods of Middle America — bananas, cocoa, coffee, sugar — form part of the cargoes continually moving north, while—southbound—the Great White Fleet carries the products of northern farms and factories.

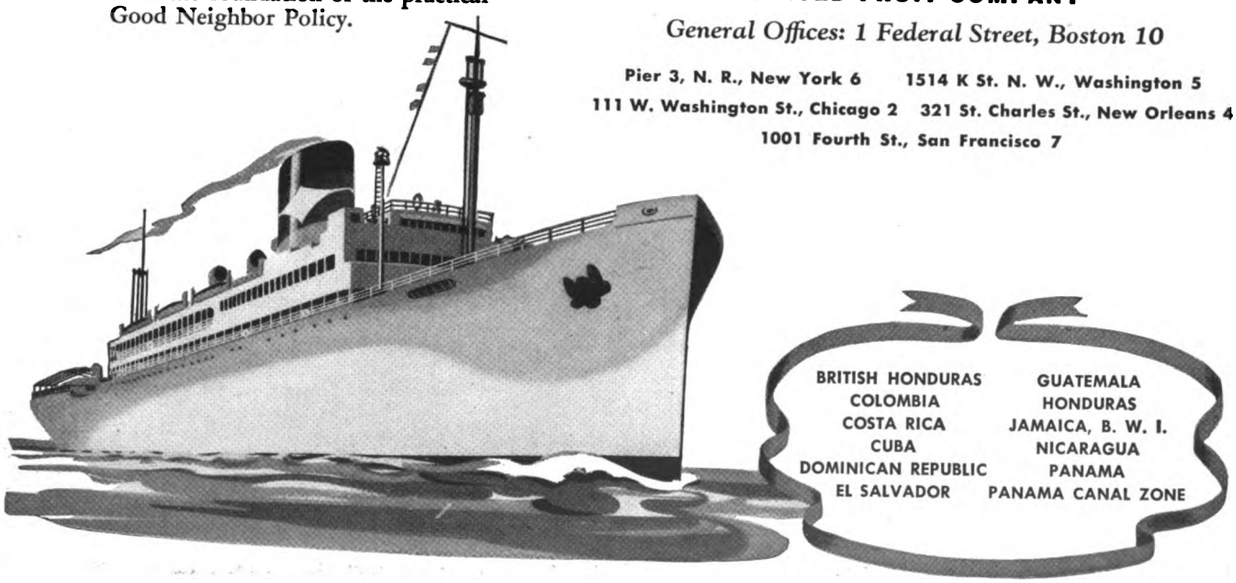
Harbinger of all this was the first white ship that sailed so long ago . . . and of much more, too . . . of the growing understanding and friendship between the Americas. The day by day contacts of thousands of individuals form the foundation of the practical Good Neighbor Policy.

GREAT WHITE FLEET

UNITED FRUIT COMPANY

General Offices: 1 Federal Street, Boston 10

Pier 3, N. R., New York 6 — 1514 K St. N. W., Washington 5
111 W. Washington St., Chicago 2 — 321 St. Charles St., New Orleans 4
1001 Fourth St., San Francisco 7



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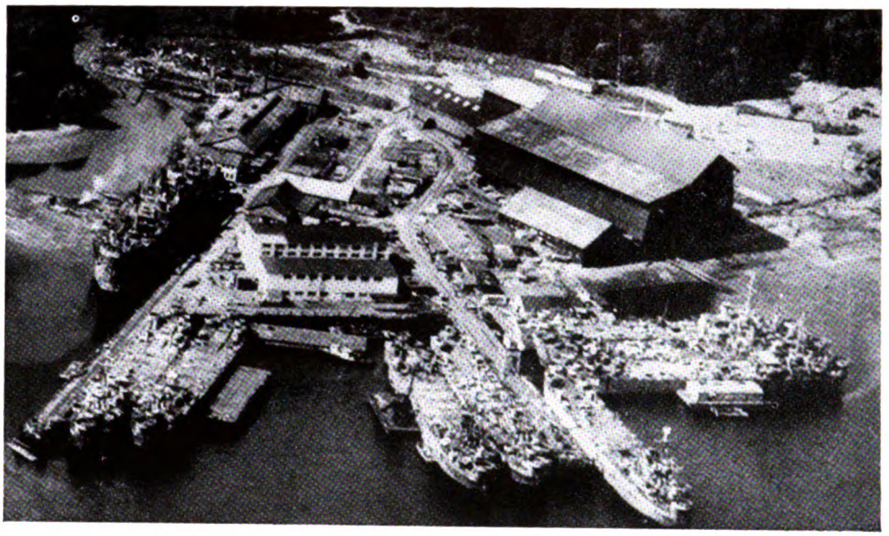
On Puget Sound

TWO PLANTS

At Which To Serve You



Nine LST's under repairs at Commercial Ship Repair—Winslow Division

Complete Facilities for all types of Repair, Conversion and New Construction on all Classes of Vessels plus Repairs At Loading Berth

★

4,000 TON DRYDOCK at WINSLOW DIVISION

Plants at
Winslow, Washington
Pier 66, Seattle

24-Hour Service
Bidding on Ships From
Coast to Coast

COMMERCIAL SHIP REPAIR

J. J. FEATHERSTONE
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LZI *saves three ways*

OVER SINGLE-PIGMENT INHIBITORS

You've got a new experience coming when you first use NEW 5037 Red LZI Metal Primer.

It's different. LZI is a composite inhibitor—lead and zinc and iron. Best formula we've ever seen—tough-tested for 26,000 lab-hours before we allowed a label on it.

It's different. LZI slips easier under the brush, has lower sheen, better tooth, and its duller, browner color hides easier under a finish coat.

It's different. LZI saves three ways. 1. Lower initial cost. 2. Lower application cost. 3. Lower maintenance cost, because LZI creeps less—gives longer inhibition with less frequent and smaller spotting to do.

Worth trying? Specify LZI. Keep your own records. You'll use LZI again! W. P. Fuller & Co. Branches and Dealers in all Pacific Coast ports, including Alaska.

FULLER • *Marine* • **FINISHES**

NOW—74% new or improved qualities!

Boot-topping
Bottom Paints
wood and metal

Cabin Finishes
Canvas Dressings
Deck Lacquers

Deck Paints
Funnel Paints
Engine Room Enamels

Hold Paints
Metal Primers
Topside Finishes

Hull Finishes
Ventilator and
Signal Colors

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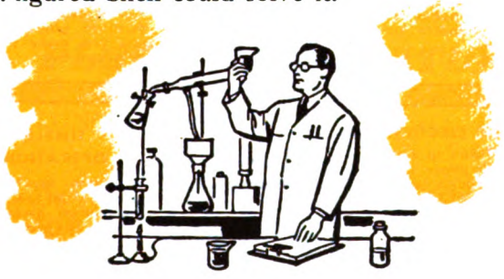
Developed by Shell scientists—

SHELL NAUTILUS OIL

a new, improved reciprocating marine engine oil

The problem with an external bearing lubricant—

is, as you know, to keep the oil emulsion stable. You've probably seen how some heavily compounded oils for this type of marine engine tend to separate . . . "gum" the feed flow . . . form sludge in storage tanks. Our lubrication men studied the problem . . . figured Shell could solve it.



Shell scientists found the answer—

in new petroleum additives, many of them formulated by Shell research. With these additives, they first developed a superior moisture-absorbing lubricant which would make a *longer-lasting* emulsion. Then they combined this new lubricant with the *best operating qualities* of rapeseed oil. The result was Shell Nautilus Oil. *And it proved to give better service than we'd expected!*

What you can expect from Shell Nautilus Oil

A free and easy flow, for one thing . . . without clogging of wick feed systems. For another, the highly adhesive lather it forms will stick to crosshead, crank pin, rod and other bearing surfaces *under the worst kind of moisture conditions.* And its emulsion lasts *indefinitely* . . . which means you use less gallonage because Shell Nautilus Oil doesn't sludge out in storage tanks. Why not measure the economy of this improved marine lubricating oil in your own ship's engine soon?

SHELL

SHELL NAUTILUS OIL IS AVAILABLE IN ALL MAJOR WORLD PORTS. CONTACT YOUR NEAREST SHELL OFFICE OR SHELL REPRESENTATIVE.

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NOW—In One
FATHOMETER*
you get both Recording and Indicating

Now, in a *single echo-depth-sounder* you can have either permanent depth charts or "red light" visual readings as desired. Here is a dual-purpose FATHOMETER echo-depth-sounder that combines the economy of "red light" with the permanency of charts.

Whenever you want a permanent record, merely switch to "recording" for a true, undistorted horizontal graph of the sea bottom contours. Then for economy, during periods when recorded depths are not needed, turn to "indicating" and the "red light" will give you accurate depth indications even while you are saving chart paper. It's handy to have, too, if you should ever run out of chart paper.

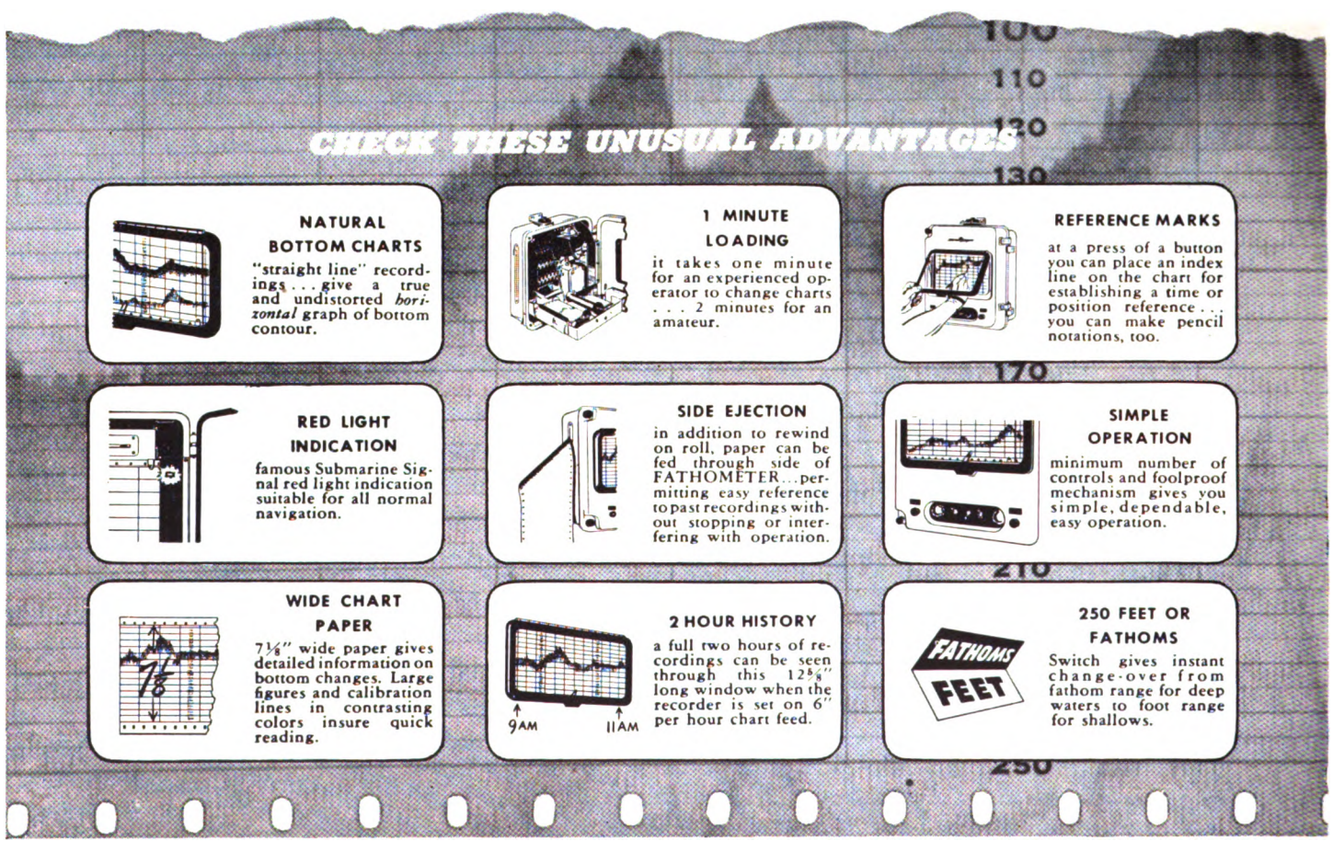
*Reg. U. S. Pat. Off.

Be sure and check the features of this new dual-purpose FATHOMETER . . . see for yourself how this outstanding new FATHOMETER gives you the advantage of both recording and indicating in *one unit*.

Remember, too, FATHOMETER service is available in twenty major American ports. Here you'll find factory-trained experts ready to handle all installation and servicing of Submarine Signal Co. gear. There are no long delays waiting for a factory man to come out from the home office . . . no tying up of valuable gear.

Write, wire or phone today for information on this unusual new FATHOMETER.

SUBMARINE SIGNAL COMPANY
160 WASHINGTON STREET, N., DEPT. 3112, BOSTON 14, MASS.



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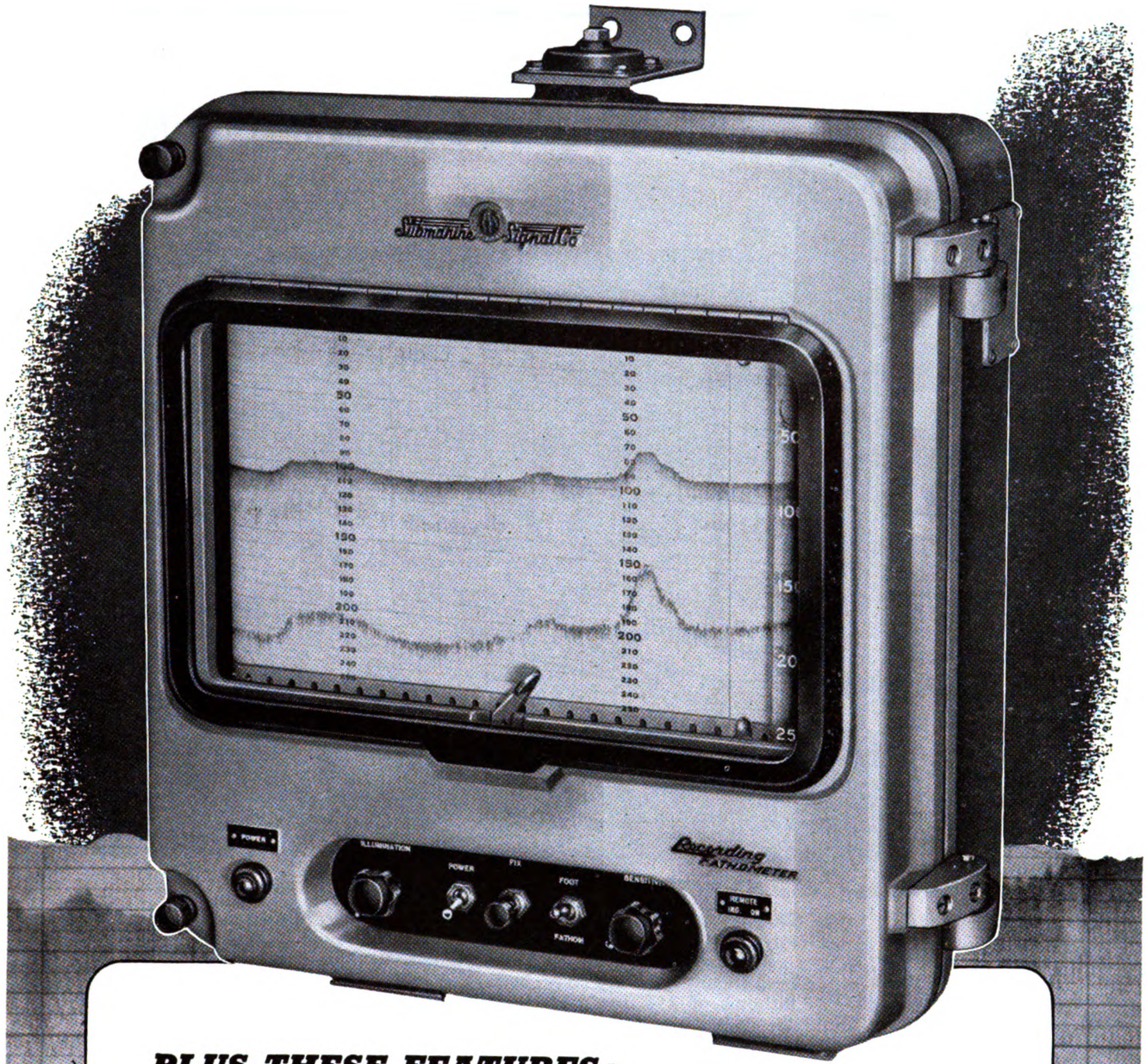

PLUS THESE FEATURES:

LONG CHART LIFE . . . 136 hours at 6″ feed rate
45 " " 18″ " "
27 " " 30″ " "

DRY RECORDING PAPER . . . a *permanent* record.

VERSATILE . . . available for operation on all ships.

HIGH SOUNDING RATES . . . 40 per minute on fathom scale, 240 per minute on foot scale . . . indicates variations in bottom contour in full detail.

ACCESSIBILITY . . . practical design ensures easy maintenance.

RUGGED . . . heavy aluminum case . . . drip-proof, strong.

CONTROLLED BRILLIANCY . . . illumination on chart paper can be adjusted to exact light needed.

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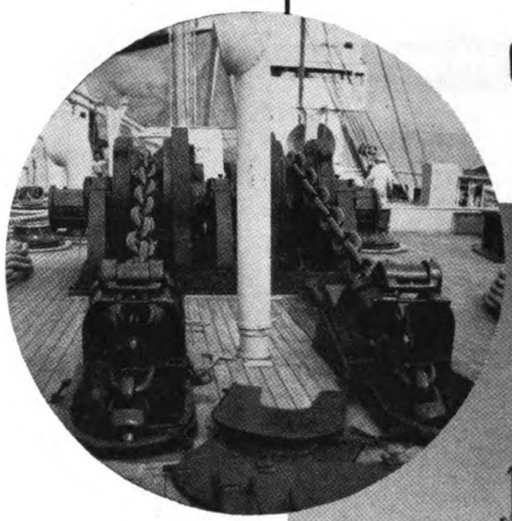
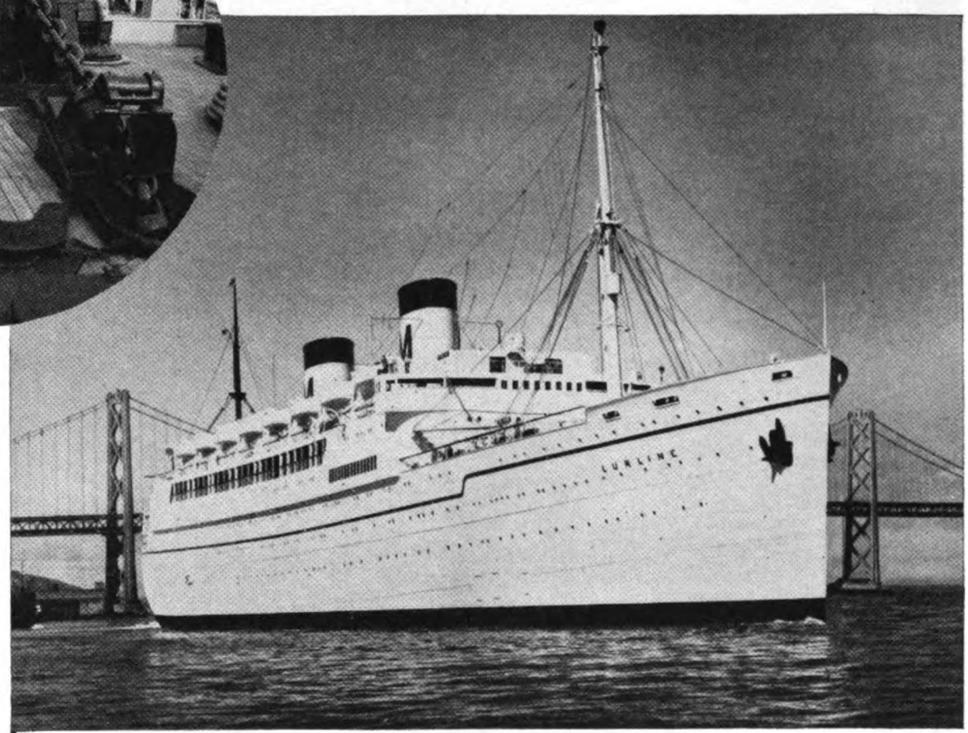
Old-timer aboard the new "LURLINE"





Newly-commissioned . . . the "Lurline" sailed her April maiden voyage to Honolulu with an old friend in her chain lockers.

Although more than 18 million dollars went into converting her, money couldn't buy better anchor chain than the 330 fathoms of 3⅛" dia. NACO, cast steel, stud link with which she was originally fitted, and which is still in use.

That's because NACO chains combine fast, smooth handling with maximum protection to ship, passengers and cargo. Every link in the entire cable is *cast*, without a weld in its length.

You'll protect your investment and give your shipmasters smooth anchor handling by specifying NACO ANCHOR CHAIN.

ESTAB. 1868

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

Cleveland, Ohio

Pacific Coast Representative

C. J. Hendry Company, 27 Main Street, San Francisco 5, Calif.

NACO ANCHOR CHAIN

TRADE MARK

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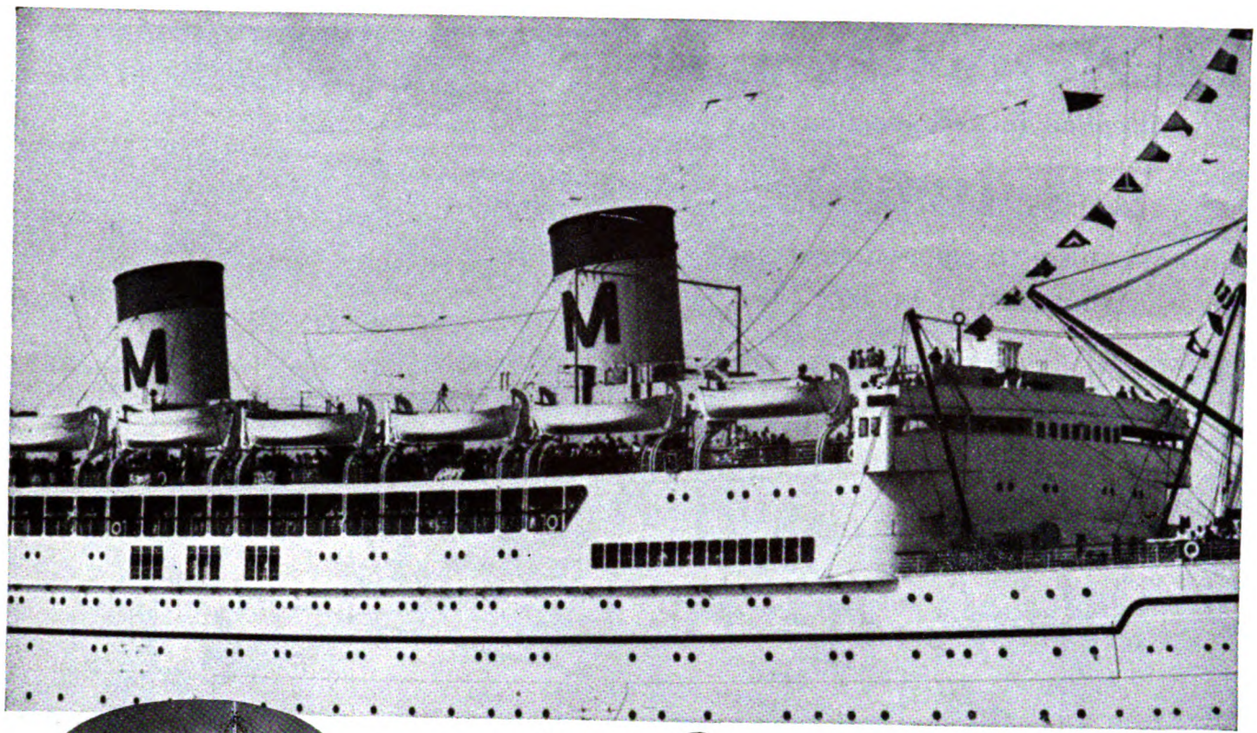

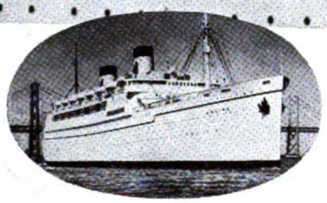

The Luxurious Lurline

Luxuriously Endowed In Vision and Ventilation

by KEARFOTT

A Lanai Suite: verandah-effect private living room by day; sumptuous bedroom by night. Kearfott Fulvu Type Windows.

Cabin Class Smoking Room, with Kearfott Casement Windows, hinged and fixed types.

Kearfott bronze-framed Windows aboard the Lurline:

PROMENADE DECKS—special type Kearfott K-15 Deck Enclosure Windows.
LANAI SUITES—Fulvu Type Kearfott Windows.
DECK HOUSES — PUBLIC ROOMS and PASSENGER QUARTERS—in addition to Casement Type Windows—framed, sashless plate glass, operated by positive crank-mechanism.

Through the Kearfott Windows on the sumptuously reconverted Lurline, lie the magnificent vistas of the Pacific. And breezes and sunshine, which can be admitted as desired through Kearfott vision and ventilation control, combine with the blue horizons and the beauty of Lurline's breath-taking Polynesian decor to create the enchanting spell of Hawaii for all aboard.

Added to these priceless passenger attractions are the safety, operating ease and dependability of Kearfott windows which have caused them to be specified not only for the Matson Line's magnificent flagship, but also for a preponderant majority of American Flag passenger vessels.

KEARFOTT COMPANY INC.
117 Liberty Street
New York 6, N. Y.

Pacific Coast Representatives:
BERRY E. DUNN, Rialto Bldg., San Francisco, Calif. — R. R. CUNNINGHAM CO., 73 Columbia Street, Seattle 4, Wash.

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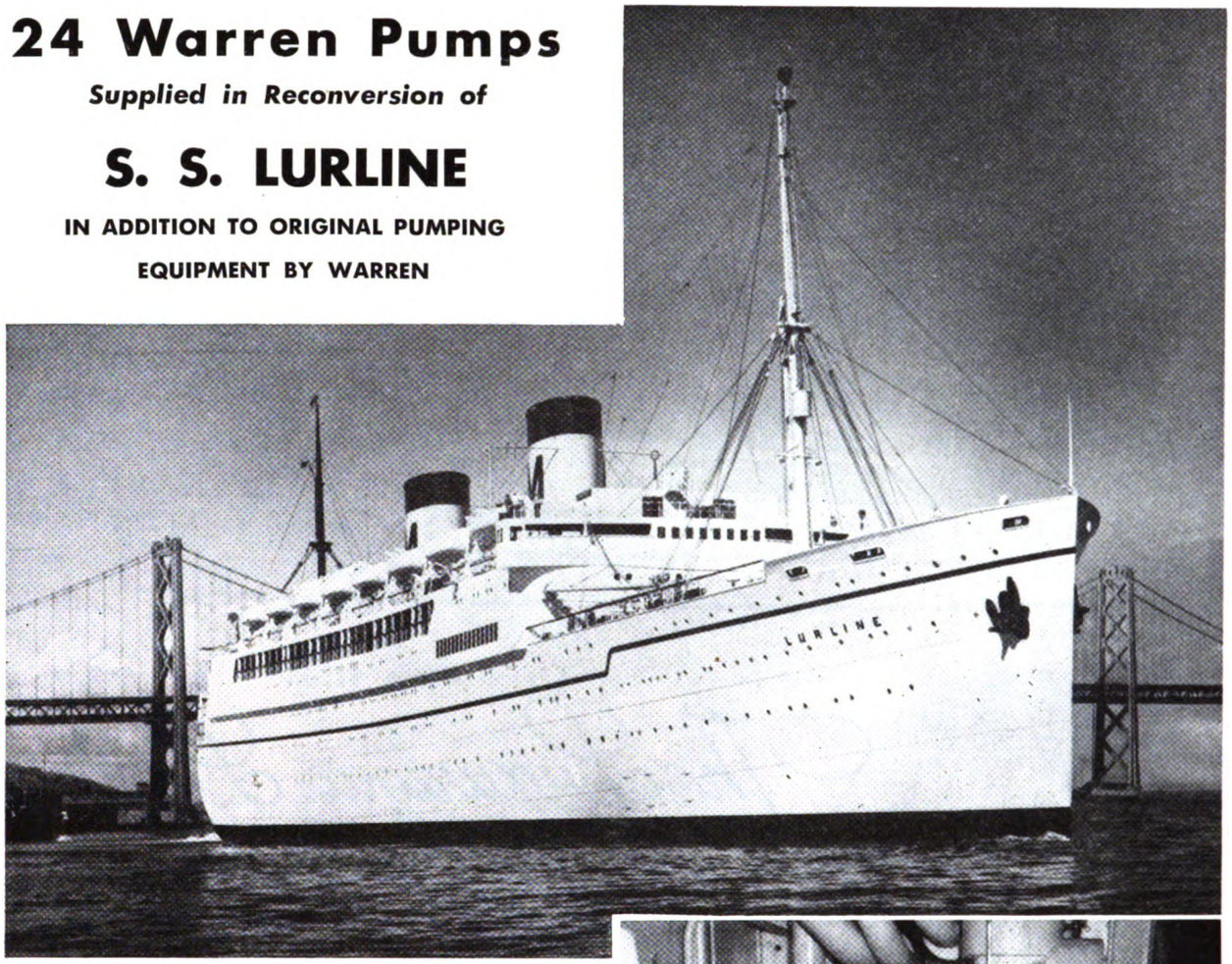
24 Warren Pumps

Supplied in Reconversion of

S. S. LURLINE

IN ADDITION TO ORIGINAL PUMPING EQUIPMENT BY WARREN

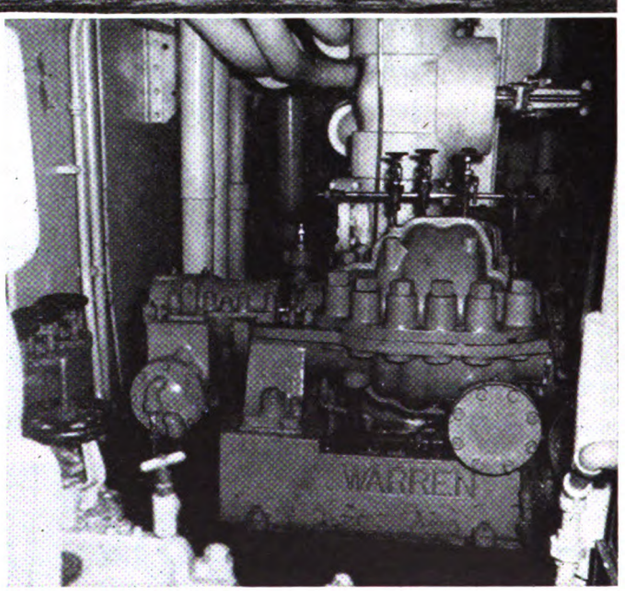


These include:

2 Port Feed Pumps
10 Distilling Plant Pumps
9 Air-conditioning Plant Pumps
3 Fresh Water Pumps

WARREN also supplied the original pumping equipment for S. S. Mariposa and S. S. Monterey, as well as additional equipment for each.

With a background of fifty years in designing and building of Marine Pumps, Warren facilities and engineering knowledge are at your disposal. Contact us or our nearest Marine office.



Original Warren main boiler feed pumps installed on the LURLINE in 1932.

WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC., WARREN, MASSACHUSETTS

New York: Warren Engineering Company, 117 Liberty Street, M. L. Katzenstein, President • **San Francisco:** George E. Swett & Company, 256 Mission Street • **New Orleans, Savannah, Houston:** Gulf Engineering Company, Inc. • **Seattle:** R. L. Dyer, 812 Insurance Bldg. • **Los Angeles:** Gil Moore & Company, 711 Gibbons Street

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THE BEAUTY OF THE
S. S. LURLINE

was enhanced with the distinctive and serviceable rubber tile, completely installed by the LORENTZEN COMPANY of Oakland. Pictures illustrate how this rubber tile perfectly harmonizes with both modern and "Island" motif interiors. All decks were leveled with DEX-O-DEX and LEVELITE. 40,000 feet of LORELITE Magnesite Floor Covering was used in the crew's quarters and service passageways.

Lorentzen
COMPANY
FLOOR COVERINGS

2207 MARKET • OAKLAND
PHONE TEmplebar 2-5613

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CARRIER REFRIGERATION keeps cargo fresher on modernized MATSON FREIGHTERS

Perishable cargo reaches port as fresh and marketable as the day it was shipped when it goes in one of the 20 refrigerated holds of the Matson Navigation Company's *Hawaiian Builder*. The newly converted freighter—one of eight Matson vessels to be reconditioned for the Hawaiian trade—has 62,500 cu. feet of cargo space refrigerated with Carrier equipment.

A cascade system circulates brine at two different temperatures. At 38 degrees, it provides chilling for meats, butter, celery, lettuce and similar foods. At 15 degrees below zero, it protects quick-frozen pineapples and other frozen products.

Matson is one of many leading steamship operators that solve their refrigeration and air conditioning problems with dependable Carrier equipment. *Carrier has supplied refrigeration or air conditioning for more than 10,000 vessels of all types and tonnages.*

Carrier service to the marine field is far-flung and complete. The thoroughly experienced engineers in its Marine Department are always glad to help with design and installation needs—whether the vessel is new or reconditioned. Carrier maintenance service is available at every deep-water port in the United States and at important ports over the world.

These new and reconditioned vessels are Carrier equipped:

SS AMERICA
SS ANCON
SS ARGENTINA
SS PRESIDENT CLEVELAND
SS DEL NORTE
SS DEL MAR
SS DEL SUD
SS LURLINE
SS EXCALIBUR and Class
SS HAWAIIAN BUILDER and Class
SS SANTA CLARA and Class
SS AMERICAN FARMER and Class

CARRIER CORPORATION, MARINE DEPARTMENT
405 Lexington Avenue, New York 17, N. Y.—MUrray Hill 6-6200
625 Market Street, San Francisco, Calif.

Carrier

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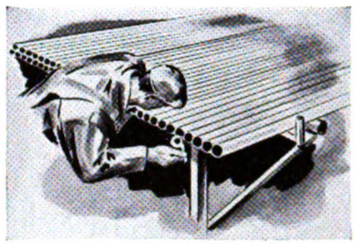
Part of the B&W staff specializes in marine boiler design and application.

Other B&W engineers are trained to supervise boiler erection and installation.



Seamless and welded tubing for all marine uses are made by B&W.

BOILER EXPERIENCE

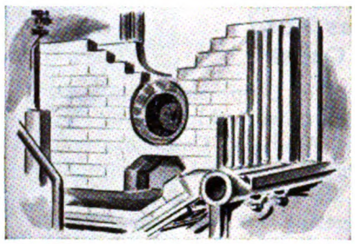
from DESIGNING BOARD to Port of Call—

Whether you are thinking about a new ship, or the improvement of an existing vessel, just remember this: from designing board to port of call, B&W Boiler Experience is ready to serve you.

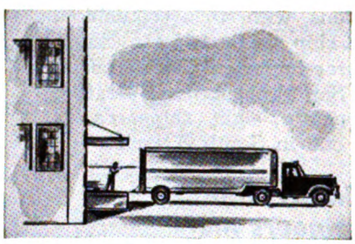
Wherever ships are planned, built or modernized—B&W's staff of marine boiler specialists is on call. And B&W is ready at all times, in major ports throughout the world, to give expert assistance in obtaining the utmost performance from B&W Boilers in service.

Call on B&W's 70 years of Marine Boiler Experience for comprehensive help in planning, selecting, installing and servicing header-type and drum-type boilers for all classes of steam-powered vessels . . . from tiny tugs to mighty warships and ocean liners.

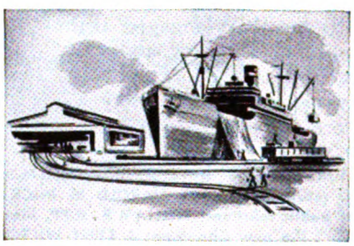
M-211



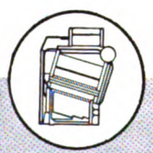
Superior refractories of the various types needed in marine service are produced in B&W's own plant.

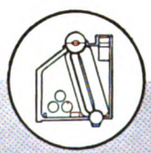


Marine supply houses maintain stocks of accurate B&W parts for quick servicing almost anywhere around the world.



Service engineers are available anywhere on short notice for port-of-call inspection and maintenance.





BOILERS FOR ALL TYPES OF SHIPS

★ ★ ★

OTHER B&W PRODUCTS — Seamless & Welded Tubes for All Pressure and Mechanical Applications . . . Refractories . . . Alloy Castings . . . Oil Burners . . . Chain-Grate Stokers . . . Stationary Boilers and Component Equipment . . . Chemical Recovery Units . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
GENERAL OFFICES: 85 LIBERTY ST., NEW YORK 6, N.Y.
WORKS: ALLIANCE AND BARBERTON, O.; AUGUSTA, GA.

ON THE PACIFIC COAST: C. C. MOORE & CO., 450 MISSION STREET, SAN FRANCISCO

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SHAFT ALLEY Chatter

Todd Leases Yard On Pacific Coast

Todd Shipyards Corp. signed a ten-year lease on the 25 acre shipbuilding and repair yard at Alameda, California and for the use of Pier 36 and facilities at Beale Street., San Francisco, owned by United Engineering Co., according to a joint announcement by John D. Reilly, president of Todd and John E. Cushing, president of Matson Navigation Company, owner of United.

Todd fills an important gap in its West Coast operations with this acquisition, which gives it ship repair and conversion facilities in three important Pacific ports; Los Angeles, San Francisco and Seattle. They now operate eight shipyards in the U.S. and one in South America.

⚓ ⚓ ⚓

Naval Architects and Marine Engineers Meet

The annual spring meeting of The Society of Naval Architects and Marine Engineers held on May 27 and 28, 1948, at Old Point Comfort, Virginia, with headquarters at the Chamberlin Hotel, was attended by members engaged in the nation's shipbuilding, shipping and allied manufacturing trades.

The two day session of the Society was planned to afford the members an opportunity to inspect and study several important institutions in the vicinity.

⚓ ⚓ ⚓

American Export Lines Issues Annual Report

The annual report of the American Export Lines, Inc., for the year 1947, showed a net income after all charges and provision for Federal Income Tax of $4,550,430 as compared with $4,420,922 for 1946.

Earnings were $3.79 per share as compared with $3.68 the previous year. The company operated 320 voyages during the year ending December 31, 1947, of which 62 were by company owned vessels and 258 by vessels chartered from the United States Maritime Commission. Export-owned vessels accounted for 72% of the operating profit.

⚓ ⚓ ⚓

Lykes Starts Division To Expand Gulf Trade

Solon B. Turman, executive vice-president of Lykes Bros., Steamship Co., Inc., announced the establishment of a foreign trade development division recently. With offices in Houston, Texas, it is designed to expand export-import trade through Gulf ports. J. R. Aston is manager of the new division.

⚓ ⚓ ⚓

Captain Adler Gets Thirty Year Award

W. G. Holloway, Chairman of the Board of W. R. Grace & Co., recently presented Captain Alf Adler, Master of the *Santa Rosa*, with the company's thirty year service award. Since he joined the company in the spring of 1918 as third officer on the Santa Lucia, he has commanded many of Grace Line's passenger liners.

Captain Adler served as a Commander in the U.S. Navy in World War II and was assistant U.S. Naval Attache in Lima, Peru, for a time.

⚓ ⚓ ⚓

AMERICA Calls at Havre Instead of Cherbourg

The United States Lines announced that in the future the French port of call for its flagship AMERICA will be Havre instead of Cherbourg. Havre, which was the regular port of call of the line before the war, has many advantages as a Channel passenger port, its officials pointed out.

PHILADELPHIA SECTION of the Society of Naval Architects and Marine Engineers last month elected SAMUEL S. MORSE of Sun Shipbuilding and Dry Dock Company (below) as Chairman. Also elected to offices in the Philadelphia Section were: George K. Marple, Vice-Chairman; Joseph A. Hill, Secretary-Treasurer; and elected to the Executive Committee were Lee C. Bennett, John Letherbury, and David Mylrea.

NEW OFFICERS of the Society of Naval Architects and Marine Engineers, Metropolitan Section, are left to right: EDGAR P. TRASK, retiring Chairman; HAROLD M. WICK, Assistant to the President, American Bureau of Shipping, in charge of public relations; WILLIAM P. JUPP, Manager, Marine Construction and Repair Division, Socony-Vacuum Oil Co., the new Chairman; J. LYELL WILSON, Research Director, American Bureau of Shipping, head of the Meetings Committee; HUGH W. MacDONALD (back), Towing Tank, Stevens Institute of Technology, new member of Executive Committee; EVERETT F. CLARK, Eastern Marine Manager, Westinghouse Electric Corp., Chairman of the Papers Committee; and WARNER LUMBARD, Marine Engineering & Shipping Review, re-elected Secretary-Treasurer.

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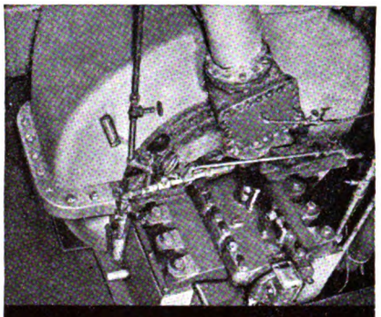
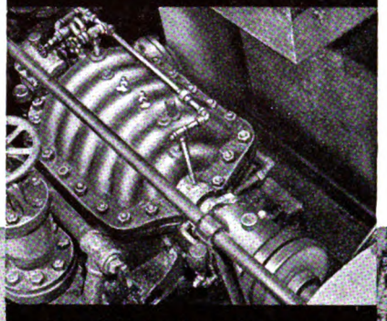
DE LAVAL *Turbines*

REQUIRE NO RECONDITIONING

AFTER 28 YEARS SERVICE

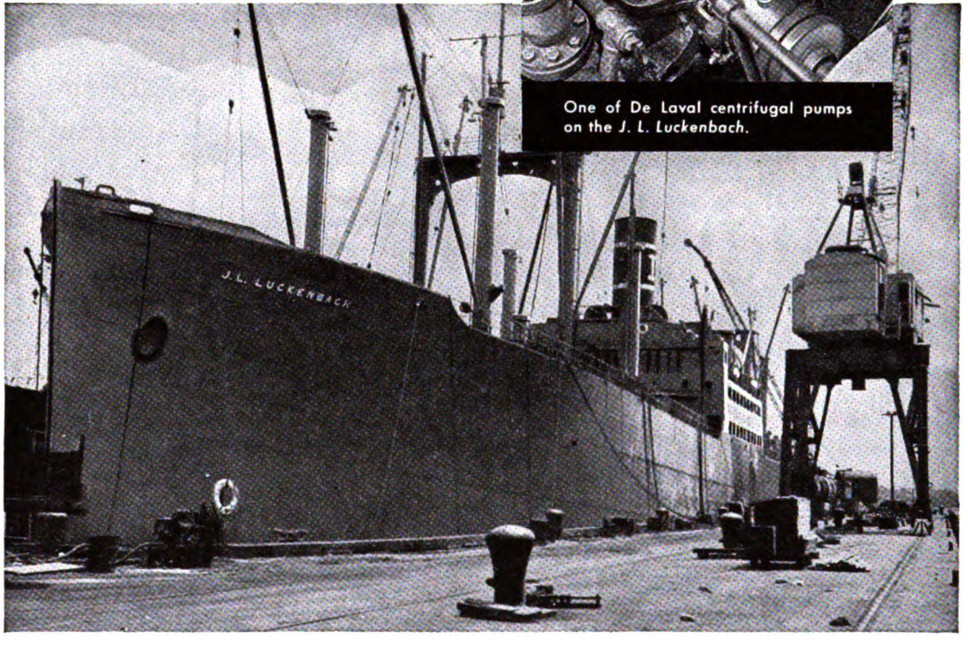


De Laval turbine still in use after 28 years of service.



One of De Laval centrifugal pumps on the J. L. Luckenbach.

J. L. Luckenbach. 13,000 ton 5,000 HP freighter completed March, 1919 by the Sun Shipbuilding Co. for the Luckenbach Steamship Co.



After 28 years of service, and 1,300,000 miles, the De Laval geared turbines, feed pumps and generators on the J. L. LUCKENBACH are still in such good condition that no major repairs or replacements have been required in refitting the ship for post war service.

For over thirty years, De Laval geared turbine propulsion units have proved their rugged reliability. The latest designs also offer the utmost in economy of fuel, space and weight.

Atlanta • Philadelphia • Los Angeles
Chicago • Pittsburgh • San Francisco
St. Paul • Cleveland • Tulsa • Boston
Charlotte • Detroit • Seattle • Toronto

DE LAVAL

New York • Kansas City • Vancouver
Rochester • New Orleans • Edmonton
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MARINE DIVISION

DE LAVAL STEAM TURBINE COMPANY • TRENTON 2, N. J. N.9

TURBINES • HELICAL GEARS • WORM GEAR SPEED REDUCERS • CENTRIFUGAL PUMPS • CENTRIFUGAL BLOWERS AND COMPRESSORS • IMO OIL PUMPS

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The Barrett Co., Inc.

Bath Iron Works Corp.

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Brewer Dry Dock Co.

The Brooklyn Union Gas Company

Bucyrus-Erie Company

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Electric Boat Company

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Levingston Shipbuilding Co.

The Maryland Drydock Company

McWilliams Dredging Company

Newport News Shipbuilding and Dry Dock Company

New York Central System

The New York, New Haven and Hartford Railroad Company

New York Shipbuilding Corporation

Norfolk Dredging Co.

Seaboard Shipping Corporation

Paul Smith Construction Company

Frederick Snare Corp.

Socony-Vacuum Oil Co.

Tampa Shipbuilding Company

The Texas Company

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SHAFT ALLEY (continued) Chatter

General Petroleum Corp.'s Marine & Terminal Personnel

General Petroleum Corporation, with headquarters at Los Angeles, maintains a fleet of T-2, T-3 Diesel and steam-driven tankers in its own name and also in the name of Socony-Vacuum Oil Company, Incorporated, an affiliate.

Terminal headquarters for all these ships on the west coast is the Southwestern Terminal on Terminal Island in Los Angeles harbor.

Head of the marine department of "General Pete" is A. O. Woll, marine manager, who has charge of the operation and maintenance of the tankers.

In addition to this marine department, General Petroleum also has a terminal operating department which is interested in floating equipment for it directs the barging of the firm's petroleum products from its bases at Los Angeles, Oakland, Portland and Seattle to various inland ports and points.

The LOG presents thumbnail sketches of the men in charge of the marine and terminal operations:

A. O. WOLL, marine manager, is immediate past president of the Pacific American Tankship Association and a former director of the Bilge Club of San Pedro. He joined the Standard Oil Company of New York in 1910, served in its construction and repair division and, in 1922 became the San Francisco agent for Standard of New York's ships. When Socony and General Petroleum merged in 1926, Woll moved to Los Angeles, where, in 1934, he was named director of the marine department. He is directly responsible for the operation of the ships of the fleets of General Petroleum and Socony-Vacuum.

LLOYD J. MOORE, assistant manager of the marine department, joined Standard of New York in 1925 at San Francisco and, in 1927 transferred to the marine department offices on Terminal Island. He was named assistant to Mr. Woll in 1935. Mr. Moore is a past president of the Bilge Club and, in World War I, served as a Navy lieutenant at sea.

RAY C. JONES, superintending engineer, marine department, is often described as the dean of west coast superintending engineers. Away back in 1905 Mr. Jones went to sea first and then went to that storied old shipbuilding school, the Union Iron Works, now the Bethlehem plant in San Francisco, which has graduated many to high posts in shipping and shipbuilding. He joined General Petroleum in the early '20's, sailing as chief of the firm's tankers MOJAVE, LEBEC and YORBA LINDA. In 1925 he was named superintending engineer and has held that post since. His duties take him from Ketchikan, Alaska, to San Diego and he spends about half his time away from home.

JOHN O. McDONALD, port engineer at Los Angeles, first went to sea in 1924. By 1927 he was a chief engineer and came ashore in 1929 to be a port engineer, first at San Francisco and then, in 1941, at Los Angeles. During the war he was a government tanker expediter, serving at Honolulu.

CHARLES L. HOLM, ship dispatcher for the General Petroleum vessels, is another old-timer with the company, having served since 1912 in the marine departments at San Francisco, Los Angeles and Terminal Island. He is in charge of scheduling cargoes of gasoline, oils bunkers and other petroleum products, sets the sailing dates, handles chartering and directs loading. During the war, when he was on loan as a liaison officer between the Navy and the tanker companies, he supervised loading of war planes on the decks of tankers.

CHARLES DOLE, marine department representative at San Francisco, is now in his 30th year with the company, having started with Standard of New York at Greenpoint, Brooklyn, N.Y. He came to the west coast in 1921.

RUSSELL H. PEW, marine buyer in charge of purchases and stores at the Terminal Island base, purchases and supervises the receipts of stores for everything that goes aboard all the company's ships, except what goes on in the form of repairs or equipment in shipyards. Mr. Pew began as a cashier in the San Francisco office of Standard Transportation Company, a Standard Oil of New York

(Continued on Page 32)

GENERAL PETROLEUM CORPORATION'S personnel in charge of marine and terminal operations . . . Marine Department—top row left to right: A. O. WOLL, Marine Manager; LLOYD J. MOORE, Assistant Manager; RAY C. JONES, Superintending Engineer; JOHN O. McDONALD, Port Engineer; CHARLES L. HOLM, Ship Dispatcher. Second row, left to right: CHARLES DOLE, Marine Department Representative; RUSSELL H. PEW, Marine Buyer. Terminal Operating Department—A. L. KNIPPING, JR., Assistant General Manager; GEORGE N. RAMSEYER, Assistant Manager; RALPH TAYLOR, Superintendent of Southwestern Terminal. Third row, left to right: JAMES A. MacLENNAN, Assistant to Mr. Taylor; H. A. BAUGH, Assistant Division Manager; C. W. MASON, Assistant Operating Manager; ALEX McCANN, Terminal Superintendent at Seattle; A. K. RIDGWAY, Assistant Terminal Superintendent. Fourth row: M. H. SCHMOKEL, Assistant Division Manager; H. W. HAND, JR., Assistant Operating Manager; DON YOUNGER, Superintendent of Portland plant; HOWARD M. ROSSELL, Assistant Division Manager; EDWARD J. CARLSON, Assistant Operating Manager; H. T. HOWE, Superintendent of Oakland terminal.

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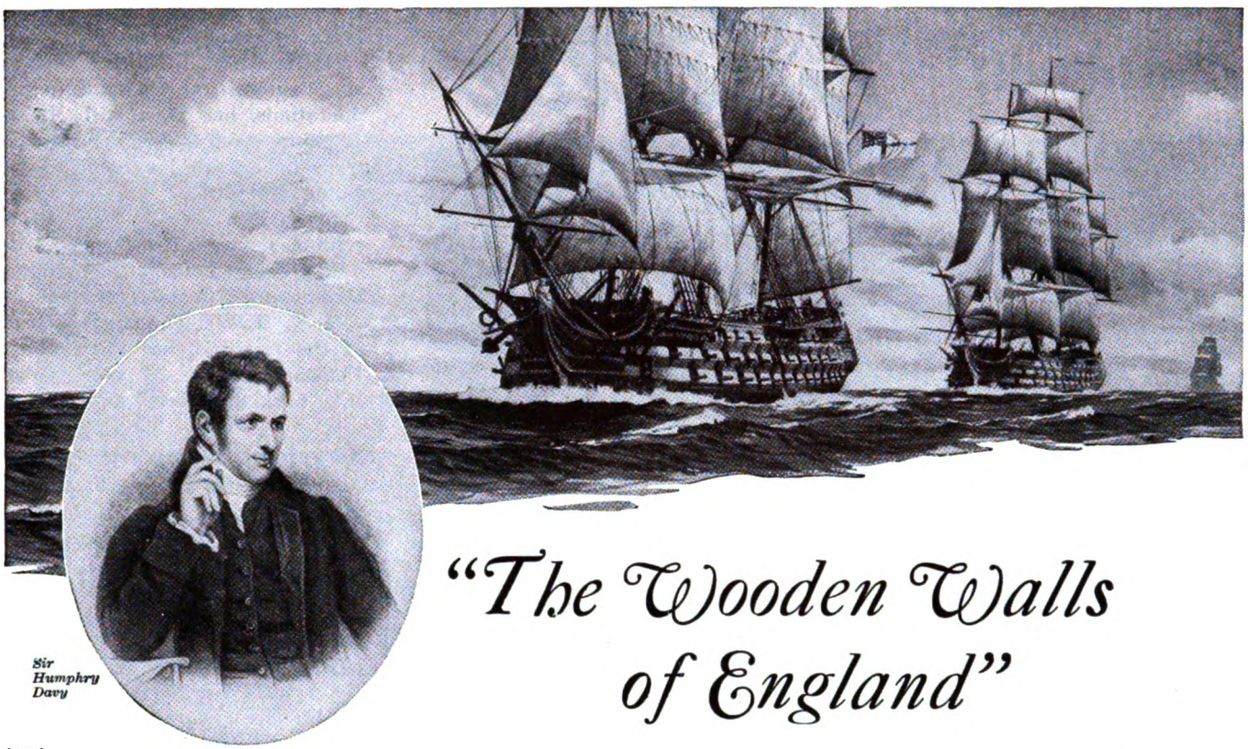

Sir Humphry Davy

"The Wooden Walls of England"

THE FIGHTING SHIPS of the British Navy always inspired a healthy respect on the part of every opponent—*but one.* That was the teredo or marine borer. This tireless little creature attacked below the water line, and didn't care whether Lord Nelson himself was on the quarter deck. It bored into the largest ships of the line and did considerable damage.

When not off his feed, a borer can penetrate planking at rates up to 1 inch per week. Accordingly, British naval vessels after the middle of the 18th century were often sheathed in copper for protection against the borer and against fouling.

This remedy was effective, but in the course of time other trouble developed. The sheathing suffered severe attacks from erosion and corrosion in areas exposed to considerable sea turbulence.

Careful records were kept on H.M.S. Alarm. This ship returned from a 20-month test voyage to the West Indies with the sheathing *on the bow* completely wasted away. In other areas the sheathing was satisfactory, but on the bow only the edges and fastenings remained. The life of the remainder was generally 4 to 5 years. The expense and inconvenience of replacement were ultimately declared prohibitive, and in 1823 the Admiralty called upon the Royal Society for help. Sir Humphry Davy rose to the occasion.

Discovery of Cathodic Protection

During the brilliant research that followed, Davy discovered the principles of cathodic protection. He showed that copper was not attacked by sea water in the absence of air. And by fixing "protectors" of zinc to the copper sheets he was able to stop corrosion of the sheathing even in the presence of air. By this means, he said, the sheathing was rendered "negatively electrical" and would be preserved at the expense of the zinc.

As often happens, this research brought valuable results, but not in the direction originally planned. Davy's method was tried on several ships, but it was ultimately abandoned by the Admiralty. It stopped corrosion, but it reintroduced fouling. Heavy accumulations of sea weeds and shellfish flourished on a ship's copper bottom when its corrosion was arrested by the zinc. It became evident that there was a distinct relationship between corrosion and fouling.

Modern research by Inco engineers has extended the knowledge of this relationship with respect to copper and copper-nickel alloys. They have shown that in order to prevent fouling of these materials, copper must go into solution at rates above approximately 5 mg. per sq. dm. per day.

Protection by Alloying

Problems of corrosion and fouling are still with us today as in Davy's time. But today they can be met by the use of suitable alloys, which are selected either to resist corrosion or to prevent fouling, with minimum metal wastage. Many nickel-bearing alloys provide excellent resistance to erosion and corrosion by sea water.

This is one reason for the extensive use of Monel* and cupro-nickel for numerous marine applications, and for many industrial uses involving turbulent brine solutions. The facilities of the Inco Marine Corrosion Testing Station at Kure Beach, North Carolina, have been used by engineers in more than ten years of research under natural conditions of exposure.

More than 20,000 specimens have been exposed to natural marine conditions under the cooperative research program at Kure Beach. Shown above is a section of the units devoted to study of the anti-fouling characteristics of metals, alloys, plastics and protective coatings.

*Reg. U.S. Pat. Off.

How Can Inco Corrosion Engineering Help You?

1. By applying the information recorded in its files,
2. By carrying out tests under actual operating conditions, and
3. By calling upon its facilities for general corrosion studies made in Inco Laboratories and Field Test Stations, Inco Corrosion Engineering Service can often shed light on your specific problem.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

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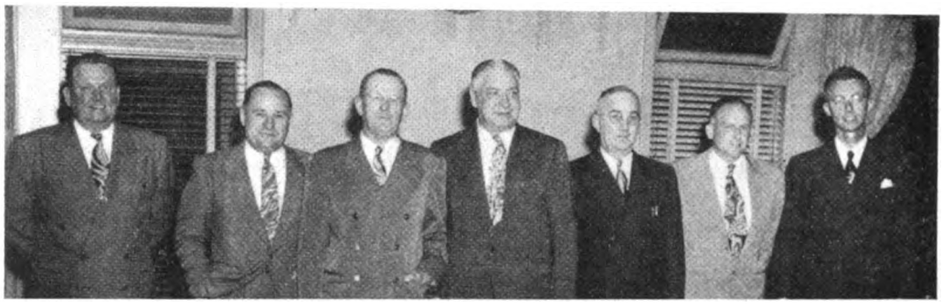
SHAFT ALLEY (continued) Chatter



BILGE CLUB ELECTS OFFICERS AND DIRECTORS . . . the directors, from left to right. FLOYD NELSON, The Texas Co.; RUSSELL H. CYRUS, Union Oil Co.; WILLIAM COURTIOUR, Bethlehem, San Pedro, newly-elected President of the Bilgers; WALTER C. RICHARDS, Wilmington Iron Works, retiring as president; HAMPTON NEERGAARD, Burns SS. Co.; JOHN MARRINER, Craig Shipbuilding Co., Long Beach; and ARTHUR PEGG, JR., International Marine Paint Agency. Earl Archibald was also named as director. Robert Snodgrass was re-elected secretary, and Win Rash, re-elected treasurer.

General Petroleum Personnel

(Continued from Page 30)

subsidiary. Today he buys for all three departments—deck, engine and steward's—and says it is no trick to buy for the two latter but as to the engine room, "there's often a surprise there for me."

A. L. KNIPPING, JR., assistant general manager of the marketing department in charge of operations, has been with General Petroleum 30 years, starting as a designer of refinery equipment. Later he was resident engineer for the company in the Pacific Northwest and took over his present post in 1925. He has charge of terminals, land transportation, maintenance of docks and wharves and other facilities.

GEORGE N. RAMSEYER, assistant manager of operations, is an aide to Mr. Knipping. He joined General Petroleum in 1923 at the firm's Vernon plant. In 1925 he became assistant resident engineer at Oakland, marketing division and, in 1929, moved back to southern California.

RALPH TAYLOR, superintendent of General Petroleum's Southwestern Terminal, directs barge operations under the Marketing Department. Mr. Taylor once sailed aboard the tanker YORBA LINDA as a second assistant engineer. He now has direct supervision over two barges, of 3,500 and 8,000-bbl. capacity and the 65-foot tug LEBEC.

JAMES A. MacLENNAN, assistant to Mr. Taylor, has been a General Petroleum man for 25 years, working for the Southwestern Terminal the entire period. He has seen the plant grow from a tank farm of five tanks of 330,000 bbl. capacity to a 22-tank establishment with storage capacity of some 1,250,000 bbl.

H. A. BAUGH, assistant division manager in charge of operations, has been with General Petroleum at Seattle 20 years, 18 in his present post. Before moving to Seattle, he was a civil engineer in Chicago.

C. W. MASON, assistant operating manager, is Mr. Baugh's first lieutenant. He is an architectural graduate of the University of Washington, joined General Petroleum in 1940, but spent five years, 1941 to 1946, in the United States Army.

ALEX McCANN, terminal superintendent at Seattle, has spent the last 25 years with General Petroleum, the only company he ever worked for.

A. K. RIDGWAY, assistant terminal superintendent, joined General Petroleum in 1928 and has worked at the firm's plants in Seattle, Tacoma and Olympia. He handles the dispatch of the tanker GENERAL and the scow barge.

M. H. SCHMOKEL, Portland, assistant division manager in charge of operations, is an engineering graduate from Oregon State College, who started as a draftsman with the company in Portland, was promoted to construction superintendent there in 1943, was made assistant operating manager at Seattle in 1945 and appointed to his present post in 1946.

H. W. HAND, Jr. assistant operating manager at Portland, is another engineering graduate of Oregon State, and has been with General Petroleum since three years following his graduation.

DON YOUNGER, superintendent of the plant of Portland, with General Petroleum 17 years, has held about every position in the yard. He started with the company in Seattle and was named to his present post four years ago.

HOWARD M. ROSSELL, assistant division manager at Oakland in charge of operations, has been with the company 19 years, starting as a draftsman. During the war he was a lieutenant in the United States Navy.

EDWARD J. CARLSON, assistant operating manager at Oakland, has been with General Petroleum 11 years and was a commander in the Navy during the war.

H. T. HOWE, Oakland, superintendent of the terminal, has been with General Petroleum there 23 years, "ever since they built the place," he says.

↕ ↕ ↕

Keystone Shipping Appoints New Pacific Coast Supt.

New Pacific Coast division superintendent of Keystone Shipping Company, Philadelphia, is Captain D. C. Brodginski, who succeeds William Anderson, recently transferred from San Pedro to become superintendent of maintenance and repair at the firm's home port.

Formerly Keystone's Pacific Coast superintendent made his headquarters with the firm's agent at San Pedro, W. H. Wickersham & Co., but Captain Brodginski is now at San Francisco with the agents, Thornley & Pitt, 520 Battery St. Head of Thornley & Pitt is Carl Madsen.

At San Pedro, Captain D. M. Davidson serves as port captain and R. J. Hicks as port engineer, working out of the Wickersham office. Port engineer at San Francisco is Henry Cave, at Portland J. W. Langel and at Seattle H. D. Williams. The company's Pacific Coast port steward, William Borchert, has been moved from San Pedro to San Francisco also. Steeb & Company are the agents of Keystone in Seattle and Portland and Leith & Dyke at Vancouver, B. C.

↕ ↕ ↕

S. Walsh Amiss Elected Treasurer of Standard

S. Walsh Amiss was recently made treasurer of Standard Fruit and Steamship Company, New Orleans. Associated with Standard and its predecessors since 1915, Amiss was in the Honduras and Nicaragua divisions for ten years.

CAPTAIN D. C. BRODGINSKI, left, New Pacific Coast Superintendent for Keystone Shipping, and HENRY CAVE, center, Port Engineer at San Francisco; C. J. MADSEN, head of Thornley & Pitt.

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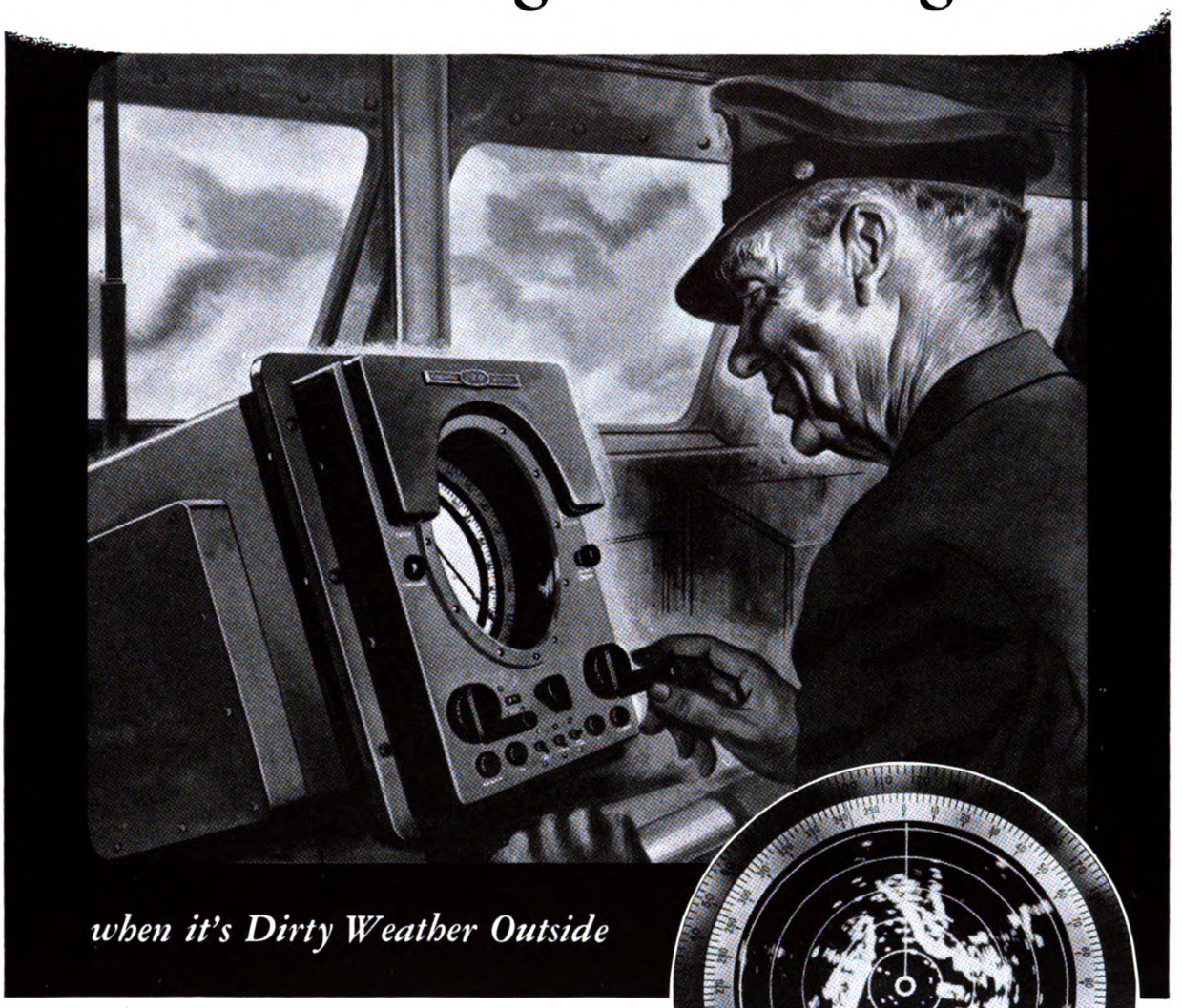
Clear Sailing on the Bridge...



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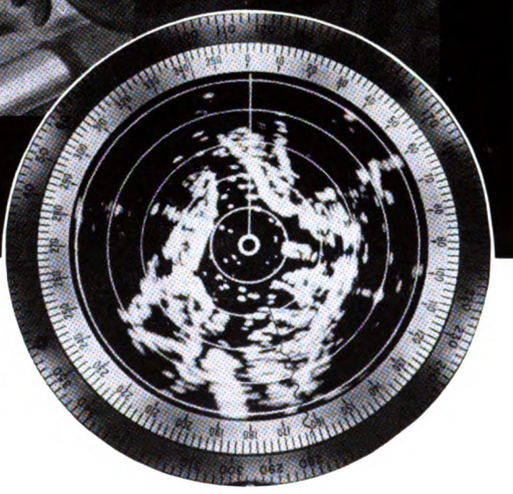

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JUNE, 1948 Vol. 43, No. 6

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Editorial Features

LURLINE Sails Again 37
Washington Reporting 40
M. R. CHESSMAN—New Motorship for Columbia River 43
How Efficient are your Boilers? 46
The Society of Port Engineers 48
Operating Ideas
Getting the Best From a Forced Draft System 50
How to Determine Bottom Condition From Your Log 51

Departments

Shaft Alley 26-32
Societies 48-49
Operating Ideas 50-52
Ports 54-57
Equipmentalk 66-72

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Federation Proposes 11-Point Program

Appearing before the Merchant Marine and Fisheries Committee, the National Federation of American Shipping presented to Congress an 11-point long-range program which it said was designed to provide economic conditions permitting private industry to build and operate a balanced American Merchant Marine.

The Federation, representing approximately two-thirds of all dry-cargo merchant vessels of American registry, said that many months' study had been used in endeavoring to reach a comprehensive program to meet the situation, fair to industry and government, and in the public interest.

The Federation called attention to President Truman's letters of April 16 to the Chairman of the U.S. Maritime Commission, and to the Speaker of the House of Representatives. In these letters the President cited the proposed 100 million dollar budget for expanded merchant ship construction, for the fiscal year ending June 30, 1949, and asked that immediate steps be taken in conjunction with the shipping industry to expedite the proposed shipbuilding program on a basis "consistent with sound business principles."

The Federation also called attention to the testimony of the Secretary of the Navy before the same Congressional Committee, urging the construction of passenger ships and tankers for national defense. The Federation said that the program it was offering demonstrated the industry's desire to cooperate in the President's suggestion.

Maritime Commission Changes Charter Policy

The Maritime Commission last month changed its charter policy to prevent companies having foreign connections from chartering Government owned tonnage. The policy change was contained in the following telegram sent to all charterers:

"The United States Maritime Commission today announced that it will not henceforth enter into charters under the provisions of Section 5 of the Merchant Ships Sales Act of 1946 nor henceforth allocate vessels for operation under existing charters entered into pursuant to the provisions of said act if

"(A) The applicant or charterer owns no dry cargo or passenger vessel of 1500 gross tons or over documented under the laws of the United States and operated in the foreign or domestic commerce of the United States, or

"(B) If the applicant or charterer or any interested person or related company, as defined in clause 30(c) of The Form of Charter Designated Shipsalesdemise 303, owns, operates, or charters foreign-flag vessels, or acts as agent or broker for foreign flag vessels, or charters vessels to foreign-flag ship operators.

"With reference to clause (A), the Commission will, on the basis of the facts in any particular case, give consideration to ownership of American-flag dry cargo or passenger vessels by closely affiliated interests of the applicant or charterer, and to contracts for the construction or acquisition of such vessels.

With reference to clause (B), generally speaking, agency or brokerage activities confined strictly to the husbanding of foreign-flag vessels will not be considered objectionable.

"Further consideration is being given by the Commission to terminating existing charters with operators not eligible to charter vessels under clauses (A) or (B) above.

"You are requested to advise the Commission in affidavit form at the end of each month beginning April 30, 1948, of the then status of foreign-flag interests supplementing your affidavit filed with the Commission in response to the Commission's telegram to all charterers of March 22, 1948.

The Commission is now making a determination of the limitation to be placed upon the number of dry cargo and passenger vessels which may be under charter to an operation in proportion to the number of similar vessels owned by such operator. The ratio between owned and chartered vessels being established will limit the maximum number of vessels that may be under charter, from time to time, by an operator.

"Effective July 1, 1948, the Commission will terminate the charter of government owned vessels to companies owning no United States documented vessels and operating in the liner or berth service in competition with privately owned United States flag vessels."

New Policy Expected For Vessel Charters

Twenty-three of the 75 companies chartering Maritime Commissions told the shipping agency that they handle only American-flag ships. Thirteen of the others own foreign tonnage, 7 charter foreign ships, 14 are general or port agents for such ships and 18 serve as port agents only. A new Commission policy is expected with respect to future charters of vessels owned or controlled by that agency.

Cargo Vessels Show Increase In Volume

Despite a sharp decline in America's foreign trade in December, United States flag vessels carried 58% of the nation's cargo showing a five per cent increase above November. Our ships carried 56% of the nation's dry cargo trade and 61% of tanker shipments. Inboard dry cargo shipments on American vessels increased from 53% to 60% while American ships carried 54% of our exports in December as compared with 51% in November. Import tanker shipments rose 28% in December, but shipments in United States ships declined from 82% to 73%.

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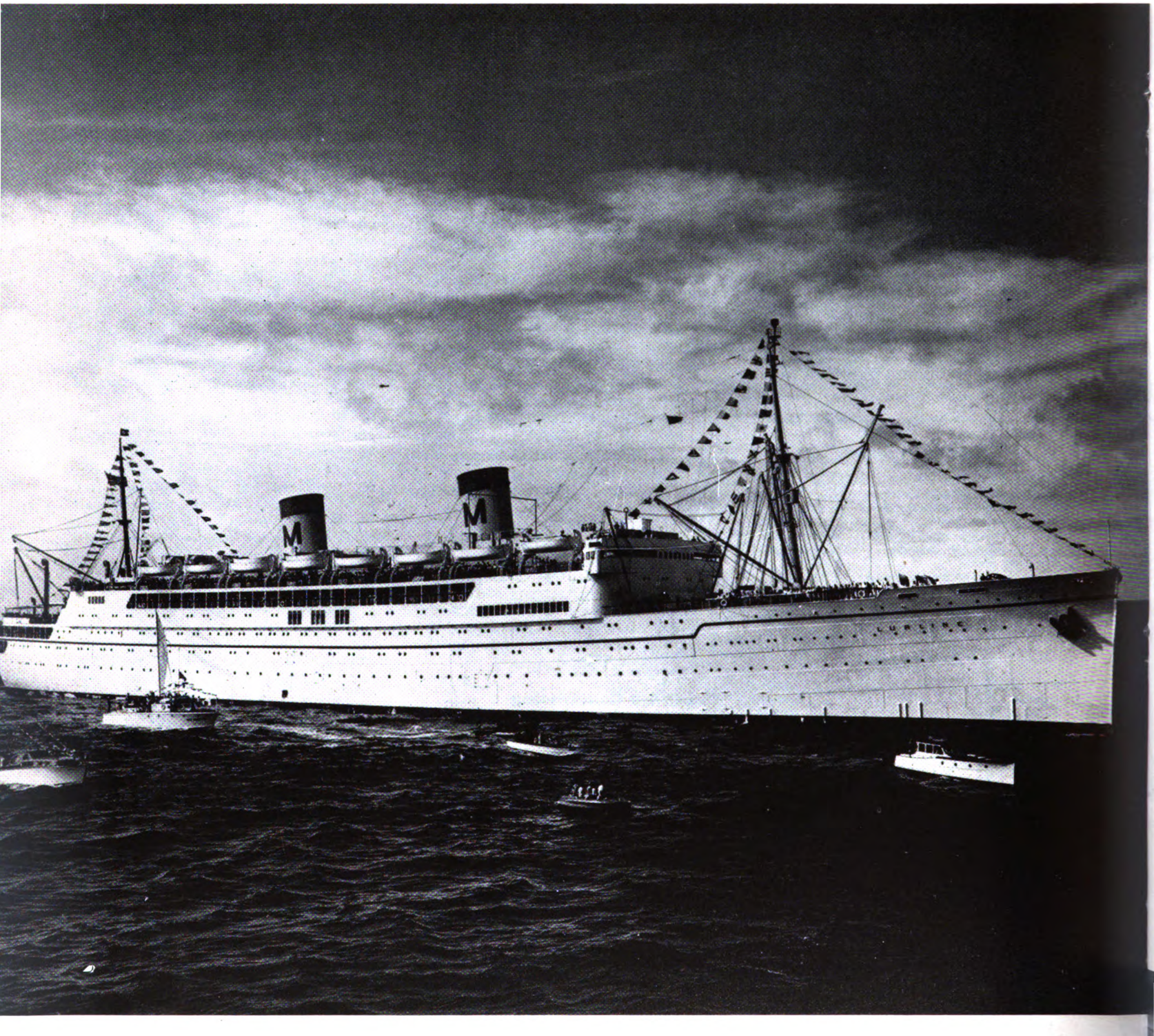

"MAHALU NUI LOA KAKOU"

"Greetings to you all," from Hawaii to the LURLINE as she steams into Honolulu Harbor on her second maiden voyage

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LURLINE SAILS AGAIN

MATSON LUXURY LINER REBUILT

Sixteen year old largest privately-owned passenger vessel, built by Bethlehem at Quincy, is converted by United Engineering at Alameda from troopship at cost of more than $18,000,000.

Out of gray war paint, Matson Navigation Company's 26,150-ton ss LURLINE is back in her groove on the Pacific sea lanes between California and Hawaii, practically a new vessel, rebuilt and refurbished from drab troopship to one of the smartest and most beautifully appointed de luxe liners afloat today.

Built in 1932, at the Bethlehem shipyard at Quincy, Massachusetts, at a cost of approximately $8,000,000, this largest of privately-owned American passenger ships, already considered past middle age, as ships go, found the fountain of youth at United Engineering Company's Alameda, California, repair yard, where more than 22 months and $18,000,000 were spent on her reconditioning.

On April 15th, the shiny white LURLINE broke her hawsers of bon voyage serpentines and pulled away from a Matson pier at San Francisco on her second maiden voyage, with every whistle on that city's waterfront tooting its loudest. She carried a capacity load of 722 persons, 435 crew members and enough cargo to fill 110 railroad cars, and sailed to Los Angeles, from where the following day she headed westward to Honolulu to receive there a royal Polynesian welcome, which included an 80-foot lei over her bow.

Replaces MATSONIA

Outward bound, the LURLINE passed the veteran ss MATSONIA, heading into San Francisco on her last voyage for Matson, to be laid up and offered for sale. The MATSONIA, which has steamed 1,948,474 miles in Pacific service in her 21 years, has served alone on the company's California-Hawaiian passenger run since shortly after the war. Now she is replaced by the "new" LURLINE.

Polynesian Decorative Theme

In the beautiful interior decorative motif of the "new" LURLINE, the liner is a floating bit of its own Hawaii. The designs were all by Raymond Loewy, whose modern concept of everything from fountain pens to airplanes, ships and railroads has made him one of America's foremost industrial designers.

Explaining the basic philosophy behind his creation of the LURLINE'S interiors, he says:

"We translated the gay relaxed atmosphere of Hawaii into the ship's design so that a passenger's island vacation begins the minute he steps aboard the LURLINE.

"We made no attempt to follow traditional lines or any particular period; instead we evolved a liveable, modern style that exemplifies contemporary American life and lends itself completely to the colorful Polynesian decorative theme we adopted.

"This combination of simplified modern design and exotic decor symbolizes the link the LURLINE provides between California and Hawaii."

Luxurious Public Rooms

The public rooms are roomy and beautiful. On "A" deck are the veranda, shopping center, library and writing room, main lounge, and the large "H" shaped smoking room, which is actually four rooms in one. This main, or first-class lounge, is one of the largest rooms on the ship. It has a stage concealed by handwoven draperies, antique gold mirrored walls, ceiling-height windows, covered by mahogany carved scrollwork screens and furnishings which achieve a harmonious blending of soft pastels. It is a room of many moods, a theatre at night, showing the latest movies, a concert room during the afternoon tea and a rendezvous at other times.

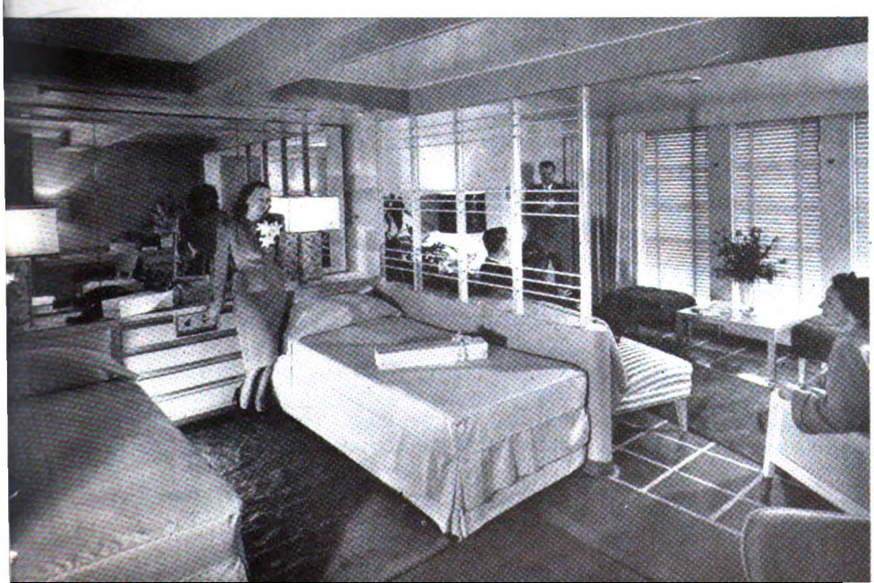
The first class smoking room is divided into four functional sections, each individually designed. On the port side forward is the club room and on the starboard side the card room. The bar forms the cross-bar of this "H" shaped room and sweeps in curved wall seats to the aft portside section. The starboard aft side alcove is another area for diversion of the room. A feature of the smoking room is a large two-section mural depicting a Polynesian ceremony preceding a native fishing expedition showing the carved prows of outrigger canoes, ceremonial masks, idols and a Polynesian village meeting house.

The veranda occupies the full width of "A" deck aft and is designed for a variety of uses. There is a large dance floor, which in the morning serves as a race track for miniature ponies and at night popular dance rhythms played by the ship's orchestra, transform it into a sparkling night club. The tables in the night club, the writing tables, the dresser tops, the edges of the card tables and other surfaces are covered with Formica.

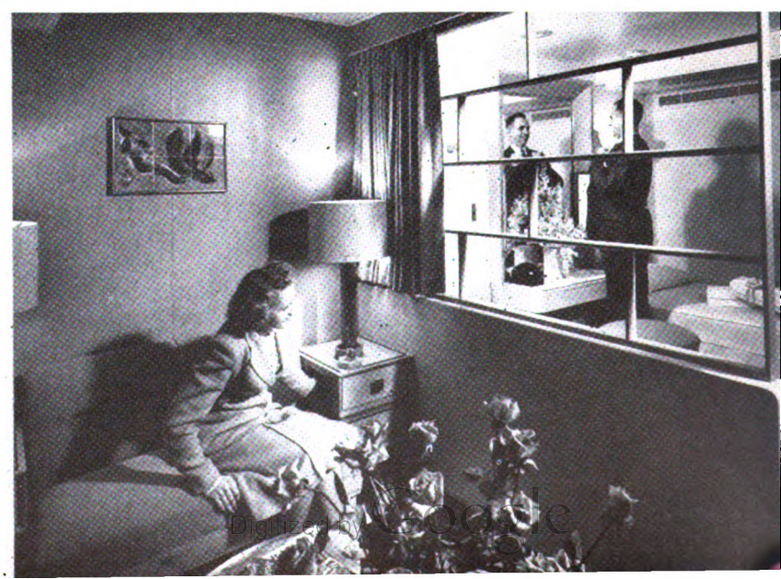
Lanai Suites and Bedrooms

Aboard the vessel are six luxurious "Lanai suites," traditional feature of Matson passenger vessels, three on each side of "B" deck amidships. These are 27 feet long and 15 feet wide with Kearfott Fulvu ceiling height windows overlooking the sea. They include a dressing room, bedroom, lanai (porch) and separate bath and toilet compartments. In addition to these

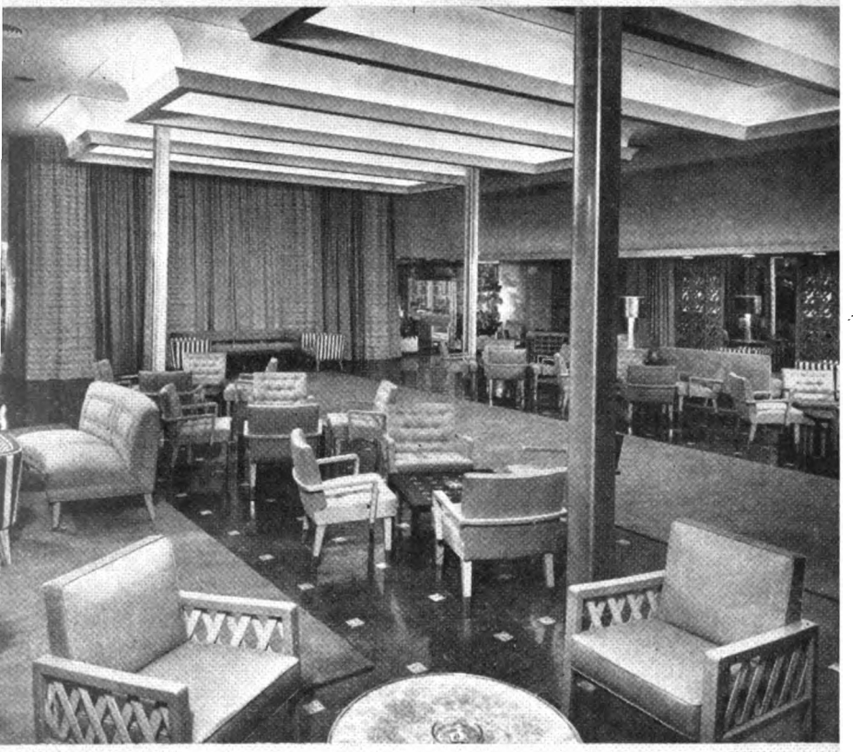
THE "LANAI SUITE" . . . is modern concept of luxurious travel. All staterooms, public rooms and crew quarters are air conditioned by Carrier Weathermaster units. Kearfott Fulvu type windows open overlooking the sea.



THE "LANAI BEDROOM" . . . a sitting room and bedroom, not quite as extensive as the "Suite." There are 34 of these rooms, each 25 feet long, 10 feet wide and separated in the center by a latticed grill.



FIRST CLASS DINING ROOM . . . showing the huge colorful mosaic. Polynesian history on menu covers captures the spirit of Hawaii. Automatic equipment gives maximum efficiency and sanitation in serving more than 3,000 meals daily.



FIRST CLASS LOUNGE . . . A theatre at night and concert room at noon this is one of the largest rooms on Matson's new ss LURLINE. A stage is concealed by handwoven drapes; furnishings are a blend of soft pastels. Deck covering throughout the entire ship by Lorentzen Company, Oakland.

THE VERANDA . . . designed for a variety of activities. Johns-Manville acoustical panels have been installed in all public and staterooms aboard the LURLINE to reduce noise. All table tops are of cigarette-proof and alcohol-proof Formica.

suites, the LURLINE adds another type of high class accommodation in the "Lanai bedrooms" comprising bedroom, sitting room, foyer and bath. The vessel will accommodate 484 passengers in first class and 238 in cabin class. Her crew of 444 totals one member for every two passengers.

Passenger staterooms feature the new "living-room-by-day, bedroom-by-night" arrangement. When not in use for sleeping, beds either disappear into a recess in the wall or become full length sofas.

The LURLINE has its own tailor shop, laundry, barber shop, beauty salon, printing shop, carpenter shop, a complete shopping center, two sports decks, a swimming pool and a wide promenade deck with plenty of room for deck chairs.

Completely Air-Conditioned

The ship is completely air-conditioned, with Carrier Weathermaster units serving the public rooms, staterooms and crew quarters. Individual control units are in each stateroom.

Although the LURLINE is better known as a de luxe passenger liner, she also is a fast, express cargo vessel, having dry cargo space totaling 233,732 cubic feet and eleven cargo refrigerators totalling 57,304 cubic feet. One of her four hatches is set aside for passenger automobiles, of which she can carry 55. She has eleven cargo booms, including one 30-ton derrick.

A twin-screw vessel, the LURLINE is one of the fastest ships in the American Merchant Marine with a rated cruising speed of 21 knots and a maximum speed of 22.5 knots. She is powered by six Bethlehem turbines, which were built into the ship at the time of her construction and recently overhauled. There is one high pressure turbine, one medium pressure and one low pressure on each shaft. Aboard, too, are the original Babcock & Wilcox twelve cross-drum, three-pass sectional header boilers, with B & W burners.

Comfortable Crew Quarters

The crew of the LURLINE, says the Matson Navigation Company, will live better than the crew of any liner afloat, for every comfort and convenience has been provided. Instead of old-style dormitories, the crew members will live in air-conditioned rooms of single, two, three, four and, in a few instances, six berths. These rooms contain full length lockers, with mirrors, individual bed reading lamps, chairs, connections for electric razors and standard beds. The crew has air-conditioned messrooms, a barber shop, all electric galley and a commissary, where cold drinks, candy, cigarettes, clothing, toilet articles and magazines may be purchased. Crew men working the night shift are grouped together on "D" deck in an area where there is maximum quiet. And deck and engine crew members working the same watches are quartered in separate rooms, so their coming and going will not disturb others. The crew, too, has a hospital with an attendant on duty at all times. The largest of the crew's five messrooms, on "F" deck for-

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ward, seats 70 and the smallest 16, all with public address outlets for the radio and musical programs. The paymaster's window, formerly in the purser's office, is now more conveniently near the messrooms in the crew area.

Modern Equipment Features

Here are additional features aboard the "new" LURLINE.

The main galley is all electric, gleaming with eight General Electric-Hotpoint ranges, pressure cookers, dishwashing machines, ovens and stainless steel working tables. Installed throughout is the most modern equipment available. Each electric toaster, for instance, turns out 750 slices of toast per hour, the potato peeler handles 50 pounds of potatoes or other vegetables in three minutes and the pressure cooker has a capacity for six bushels of vegetables.

Generous use of aluminum was made aboard the LURLINE. Approximately 160,000 pounds of Alcoa aluminum sheet were used to face the Johns-Manville Marinite bulkheads. Too, the new housing on the forward sun deck has aluminum plating and the Welin lifeboats aboard are of Alcoa aluminum. On the boat deck aft is another new aluminum house containing nine rooms for officers.

The LURLINE makes her own fresh water in two Griscom-Russell distilling plants, each having a capacity of 40,000 gallons per day and an overload of 60,000 gallons. These units were developed by Bethlehem Steel Company and The Griscom Russell Company and they make the LURLINE entirely independent of shoreside fresh water. Because her fresh water tanks always are full, the vessel has more stability and riding comfort. The vessel also is equipped with a water chlorination system.

Aboard is a 400-line telephone system for passengers, and two additional telephone systems for use of her operating personnel.

Radiomarine Corporation furnished all radio, telegraph and telephone transmitting equipment, which includes a telephone transmitter which can communicate to any spot in the Pacific and a high frequency telegraph transmitter which can reach any spot on the globe. As soon as the ship docks at any port, lines are connected with the shore telephone system so passengers can place or receive calls from their stateroom exactly as if they were at home.

The public rooms are flooded with sunlight through Kearfott hinged and fixed type casement windows. The promenade deck is fitted with Kearfott special type K-15 deck enclosure windows.

Lamson conveyors were installed to handle baggage through side ports to cut down the LURLINE'S turnaround time in port.

All public rooms and quarters have built-in speakers for radio and recorded music. Music and programs are distributed by a public address system built especially for the LURLINE by the Republic Electric Company.

(Continued on Page 58)

STATEROOM BY DAY . . . is a living room and by night is a bedroom. Beds not in use are either concealed or become full length sofas. The arrangement is spacious and comfortable for passengers.

⚓ ⚓ ⚓

CABIN CLASS STATEROOM . . . Shown here is one of the three-berth cabins as a daytime living room. Bulkheads in staterooms and public rooms aboard the LURLINE are of Johns-Manville Marinite faced with Alcoa aluminum.

⚓ ⚓ ⚓

READY FOR BED . . . in cabin class stateroom aboard the new $18,000,000 Liner. By day two of these three beds will disappear and the third convert into a sofa. There are 56 staterooms with three berths on this ship.

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WASHINGTON Reporting

Official Organ: The LOG

Bill to Amend Merchant Marine Act

A bill to amend the Merchant Marine Act was introduced by Mr. Weichel, Ohio, as a joint resolution to amend the Act of 1936, to strengthen the American Merchant marine, to encourage investment in the American merchant marine to build more ships, and to remove inequities. This bill would amend section 501(a) and (c) to authorize any U. S. citizen to make application to USMC for construction-differential subsidy for construction of new vessel, or to aid in reconstructing or reconditioning any vessel, for use in U. S. domestic trade, in addition to U. S. foreign trade as now provided, without specification as to service, route, or line in which the new or reconditioned vessel shall be operated, and without restriction as to operation of a new vessel.

Section 506 would be repealed. This section requires owner of vessel for which construction subsidy has been paid to agree that vessel shall be operated exclusively in foreign trade and in certain specified related trades and if vessel is operated in domestic trade owner shall agree to repay to USMC certain proportion of subsidy for operation of vessel in domestic trade.

Section 511(b) would be amended to provide for establishment of construction reserve fund not only for construction and acquisition of vessels as now provided, but also for acquisition of "other facilities."

Section 511(c) would be amended to provide that vessel earnings, and receipts relative to amounts previously deposited and remaining in construction reserve fund, all or part of which are deposited in such fund, shall be exempted from Federal income and excess-profits taxes. Subsection (c) would be further amended in connection with exceptions from general requirement for deposit in reserve fund within 60 days, to provide that deposits of vessel earnings in such fund may be made not later than prescribed filing date for taxpayer's income tax return.

Section 511(d) would be amended to provide that basis for determining gain or loss for depreciation, for purposes of income and excess profits taxes, with respect to any "other facility," in addition to any new vessel as presently provided, constructed or acquired by taxpayer out of reserve fund shall be reduced by that portion of the deposits in the fund expended in construction or acquisition of the "facility", in addition to new vessel, which represents "earnings or receipts", as well as gain as presently provided, not recognized for tax purposes under (c).

Section 511(e)(3) would be amended to provide that for purpose of section 511 if any deposit consists in part of earnings or receipts, in addition to gain as now provided, which is not recognized for tax purposes under (c), then any expenditure, obligation or withdrawal applied against such deposit shall be considered to consist of gain in the proportion that the part of the deposit consisting of earnings or receipts, as well as gain as now provided, bears to total amount of deposit.

Section 511(g) would be amended to provide that (c) and (f) shall apply to any deposit in reserve fund only to extent that such deposit is expended or obligated for expenditure within 3 years from date of deposit or in case of construction or acquisition of new vessel within such time as now provided in this subsection for any of the following purposes: (1) Liquidation of indebtedness on vessels; (2) capital expenditures in vessel reconditioning; (3) acquisition of terminal or other facilities directly connected with shipping operations, subject to prior USMC approval, or, as now provided, (4) under contract for construction or acquisition of new vessel entered into within 3 years, instead of present 2 years, from date of deposit, only if certain conditions, as now provided in (g), are met, with extension of the time limitation from 2 to 3 years.

Section 511(h) would be amended to provide for extension of 3 years from 9-30-48 within which time deposits in reserve funds as of such date must be expended or obligated for construction or acquisition of new vessel, or within which time construction must have progressed to extent of 5% of completion.

Section 511 (i) would be amended to include earnings or receipts, as well as gain as now provided, on deposit in reserve fund which shall be subject to income tax if conditions relative to expenditure or obligation of such deposits are not met.

The bill would add a new section 512 to Title V of the Act, which similar to H.R. 5887, would permit owner of nonsubsidized vessel to amortize cost of vessel in any manner he might deem appropriate, and to deduct annually such portion of cost for tax purposes.

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Senate Reverses House Recommendation on Panama Canal

The Senate Committee on Appropriations, in its report on H. R. 5524 (S. Dept. 1167), made the following statement relative to Panama Canal tolls:

Toll Charges

The House report contained the following paragraph relative to increasing tolls charged by the Panama Canal:

"Under authority of an act of Congress passed in 1937 the President of the United States is authorized to fix toll charges for commercial traffic using the Panama Canal at not to exceed $1 per ton for laden ships and a lesser amount for ships in ballast. Shortly after this authority was granted a rate of 90 cents per ton for laden vessels and 72 cents per ton for vessels in ballast was fixed and has not since been changed. In the meantime operating costs have materially increased to a point where the Panama Canal finds itself with insufficient funds from tolls to meet all operating costs. In view of the facts, including the fact that commercial shipping interests have increased their charges to the public it is the opinion of the committee that toll charges should be increased to the maximum amount permitted by law, and in addition that the proper legislative committees of the Congress should give early consideration to the question as to whether present maximum charges are sufficient to meet present-day conditions."

The committee held hearings at which various witnesses testified against increasing the toll charges, pointing out the adverse effect upon American shipping if such tolls were increased. This testimony appears on pages 1355-1376 and 1392-1394 of the Senate hearing.

Particular attention is directed to the following extracts from a letter received from the Chairman of the United States Maritime Commission, appearing on pages 1359-1362 of the Senate hearing:

"The Maritime Commission, from its experience with prewar and postwar intercoastal shipping, is of opinion that an increase in Panama Canal tolls at this time would seriously impede the revival of intercoastal shipping. Failure of our efforts to restore the intercoastal trade would involve serious consequences to domestic commerce and the national defense.

"While the domestic water carriers have published some increases in freight rates since the end of the war, such increases have not been sufficient to compensate for increased costs of operation; and further increases adequate to the needs of the service cannot be effected in the face of depressed level of water-competitive rates maintained by the railroads.

"We feel that the raising of Panama Canal tolls involves consequences to United States maritime interests of such moment that the step should not be taken unless the Congress finds it imperative after full consideration of all the issues involved. One of such issues is the question of the extent to which merchant shipping should be required to bear the cost of operating the Canal, including the cost of functions that are purely military. The Canal has a dual function, serving alike the interests of commerce and national defense. The fact that United States military vessels enjoy free transit suggests that merchant shipping may al-

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ready be carrying an excessive share of the Canal's operating costs.

"While in this letter we have discussed intercoastal shipping, the discouraging effect on our maritime enterprises of raising Panama Canal tolls might extend and be detrimental to American-flag ship lines in foreign commerce as well.

"We question strongly if after full investigation, in which the shipping industry and the Maritime Commission would be privileged to present their views and supporting evidence, Congress would consider it in the public interest for these tolls to be raised. Meanwhile we hope it will be possible for your committee and the House Committee on Appropriations to take action to prevent the quoted language from the House committee report being regarded and complied with as a mandate to raise the Canal tolls prior to the holding of a hearing on the question. We hope that this committee and the House Committee will agree that such action should not be taken except on the basis of such a hearing."

Shortly after the committee's hearing, and prior to its publication, the committee was advised that the Department of the Army submitted to the Chief Executive a proclamation, which was signed by the Chief Executive, increasing Canal tolls for laden vessels from 90 cents to $1 per ton to become effective October 1948.

In view of the additional information and evidence on this matter developed at the committee's hearing, which was not available to the House Committee, the committee strongly urges that the proclamation increasing the Canal tolls be reviewed, especially in the light of the adverse effect such an increase will have on American shipping.

President Calls for Private Initiative in Shipbuilding

Private steamship lines, aided by building differential payments, were asked last month by President Truman to take the initiative in pledging the purchase of new passenger ships and in building fast oil tankers under the Administration's recently-outlined Merhant Marine preparedness program.

In a letter to Admiral W. W. Smith, Maritime Commission Chairman, the President pointed out that the shipping industry must lead the way in effectuating the $100,000,000 new building plan, outlined to Congress by John L. Sullivan, Secretary of the Navy. Admiral Smith was asked to cooperate closely with James V. Forrestal, Secretary of Defense, in integrating the Merchant Marine's role in the defense picture. The Commission was also urged to expedite the 1948 program under which seven new liners are presently planned, so that contracts for all construction will have been closed by the end of the present fiscal year.

"It is encouraging to note," Mr. Truman stated, "that orders have recently been placed with American shipyards by private interests for the construction of a considerable number of tank vessels of advanced design. This, together with expanded naval and Maritime Commission ship construction programs, should reverse the recent downward trend of employment in the shipbuilding industries.

"It is to be hoped that additional orders for the construction of vessels under private account will be placed in the near future, and, in this connection, I wish to emphasize that I regard the Government-sponsored program for merchantship construction as a stimulant to, rather than a substitute for, construction by private industry.

"I am requesting, therefore, that immediate steps be taken by the Commission in connection with the shipping industry to determine what additional ship construction is economically justified at this time as evidenced by willingness on the part of industry to purchase vessels constructed.

"With regard to tanker construction, I feel that Government participation should be limited to the cost of national defense features. With respect to other types of construction, I believe that, as stated in my budget message to the Congress 'construction of new vessels should be limited to those for which private purchasers are available,' and that the Government's participation should be based upon the principle of providing, through subsidy, the differential in cost between foreign and domestic construction, as provided in Title V of the Merchant Marine Act.'

"In order that the construction program of the Maritime Commission may be properly integrated with the security program I request that the Commission establish complete liaison with the Secretary of National Defense. It is important that the closest working relationship exist between the two agencies."

President Truman, on April 19, officially asked Congress for the $65,163,879 additional appropriation for expanded merchant ship construction and other Maritime Commission costs, as outlined by Sullivan. The money is in addition to the $39,500,000 previously asked for by the Maritime Commission for the 1949 fiscal year beginning July 1. Mr. Truman's request was made in a letter to House Speaker Joseph Martin (R., Mass.).

Favor Navy to Provide Salvage Facilities

Legislation (H.R. 4490) which would authorize the Navy to provide salvage facilities has been favorably reported to the Senate from the Armed Services Committee by Senator Saltonstall. Salvage operations for merchant ships as well as naval vessels would be authorized, with annual expenditures not to exceed $3,000,000. Such a state-sponsored salvage service has been considered since the expanded aides to navigation system has rendered private salvage operations so unprofitable that between the two most recent wars, only one salvage company of any size was available.

House Committee Favors Extension of Alaska Plan

The House special committee considering extension of the present special charter agreement by which several American steamship lines are enabled to operate in the Seattle to Alaska trades, recently announced they favored a limited continuation of the present arrangement with some modifications. They indicated that a resolution to this effect would be introduced shortly.

Bill Authorizes Work to Improve Harbor

A bill was introduced recently, authorizing the construction, repair and preservation of certain public works on rivers and harbors for navigation, flood control and other purposes. It would provide that hereafter direct allotments from appropriations for maintenance and improvement of existing river and harbor works, or from other available appropriations, may be made by Secretary of the Army for collection and removal of drift in Baltimore Harbor, Maryland, and its tributary waters, and that this work shall be carried out as a separate and distinct project.

The bill would authorize and direct Secretary of the Army to make preliminary examinations and surveys in certain localities.

Committee Sets Hearings On Taft-Hartley Law

Hearings on proposals to amend the Tart-Hartley law were announced by the Joint Congressional Labor Committee recently with special consideration to the following questions. Hearings started May 24.

1. Should all forms of compulsory membership in unions be eliminated or should Congress drop the requirement for National Labor Relations Board elections before a union shop may be granted?
2. How can the labor board's handling of cases be speeded up; should enforcement of the law be shifted to Federal courts or special labor courts?
3. How should industry-wide strikes be met in cases like the current railway strike threat and the coal dispute?
4. What is a "sound, permanent solution" to disputes over union welfare funds?
5. Should Congress outlaw strikes or strike threats aimed at forcing employers to violate the law or evade it?

Plan Toll Program For Panama Canal

The Association of American Ship Owners recently announced a program which would reduce commercial tolls for the Panama Canal by 40%. It would exempt domestic inter-coastal shipping from all toll payments. Since the Canal today is more than adequate to meet commercial needs, any additional investments of a military or political nature should not become a burden to commercial shipping.

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Ferryboat M.R. CHESSMAN

Designed by the Albina Engine & Machine Works, Inc., to meet the requirements of the State Highway Commission for the service across the Columbia River from Astoria, Oregon, to Megler, Washington. A special feature is a propeller guard to prevent damage to fish nets, which during the season literally fill the river at this point.

An exceptional feature is the car deck arrangement, in that there is no engine room trunk to interfere with making the utmost use of all the deck space. There are five lanes, accommodating 40 cars, with one lane directly on center line for loading long semi and double trailers. All exhaust pipes, steering cables and conduit are carried through specially designed trunks in line with stanchions. Dining space, with modern stainless steel galley, is provided to serve forty-four persons.

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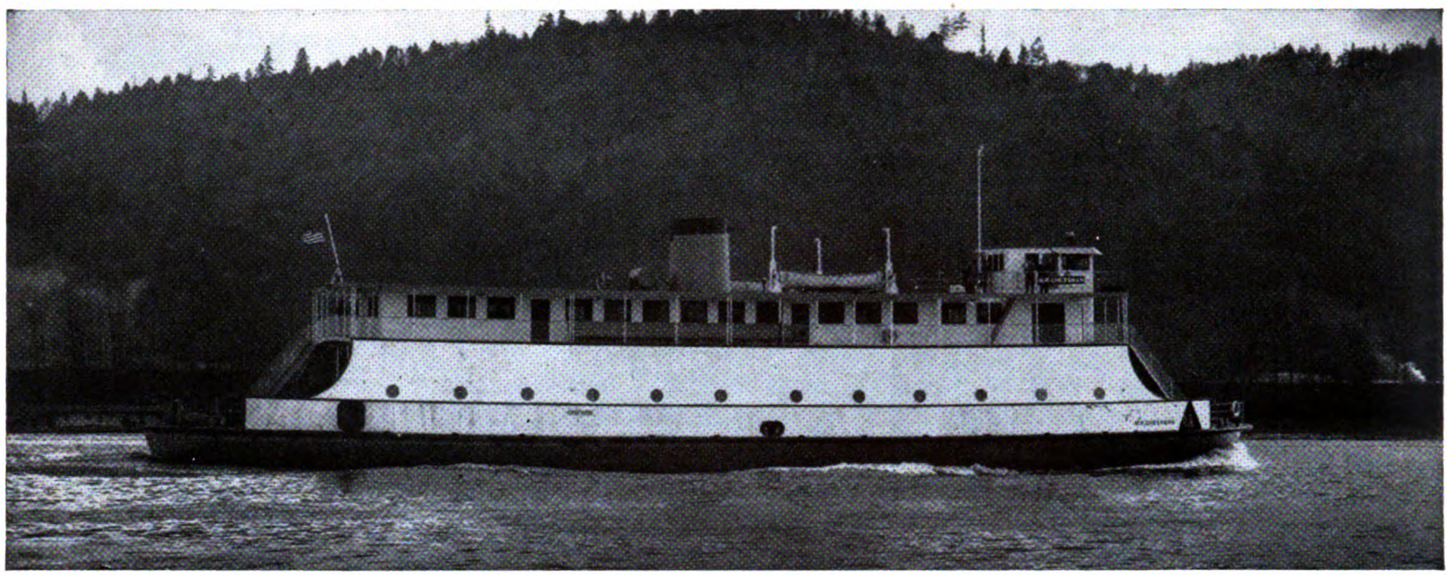


M.R. CHESSMAN, new diesel powered ferry for the lower Columbia River.

MOTOR VESSEL "M. R. CHESSMAN" NEW FERRY FOR COLUMBIA RIVER

A new ferry, the mv M. R. CHESSMAN, is in operation on the lower Columbia River between Astoria, Oregon, and Megler, Washington. Owned by the State of Oregon, the ferry is operated by Babbidge and Holt, Inc., under contract with the Oregon State Highway Commission.

The vessel is named for the late M. R. Chessman, former Astoria publisher and prominent member of the Oregon State Highway Commission.

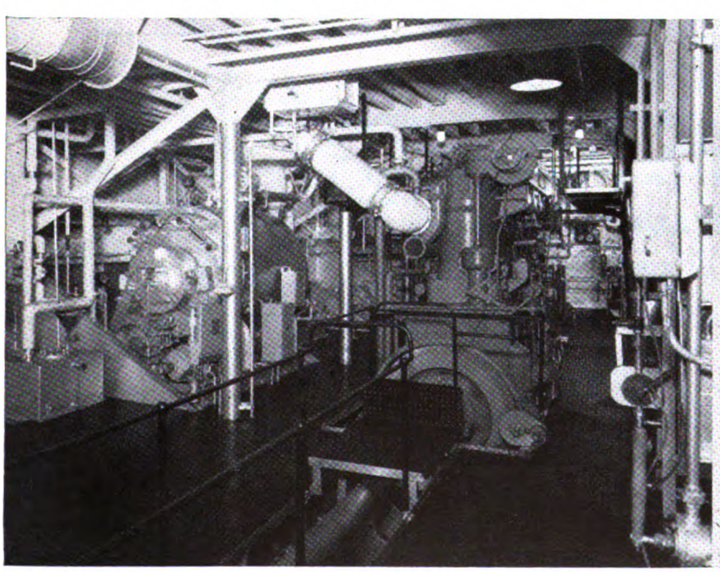
Specially Designed

Designed and built by Albina Engine and Machine Works, Portland, Oregon, at a cost approximating $500,000, interesting features include the absence of engine room trunk on the car deck, bridge construction supporting the car deck, a propeller guard to prevent damage to fishermen's nets, and application of special color of anti-fouling paint above the water line.

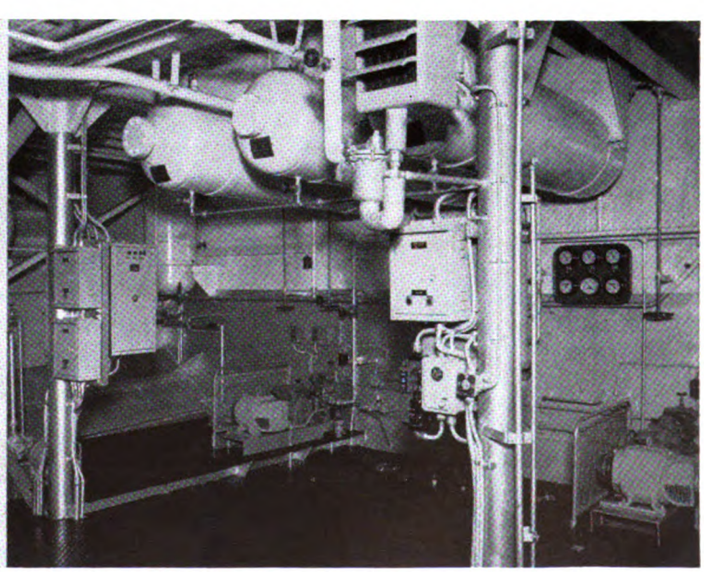
With extreme beam of 51 feet, 1½ inches, the 180 foot long all welded steel vessel has a capacity of 40 vehicles and 400 passengers. The car or main dock is divided into five car lanes. Elimination of engine room trunk permits one lane on center line for loading of long semi- and double-trailers, allowing for direct loading and unloading of these trucks without excessive maneuvering. All exhaust flues and necessary pipes, steering cables, electric conduits, etc., are carried through specially designed trunks in line with a double row of stanchions, which divide the truck lane from the four outside lanes.

Except for the peaks, the hull is longitudinally framed and is divided into seven watertight compartments, with heavy web frames spaced at ten foot intervals between the bulkheads. The main deck is supported by four longitudinal girders running the entire length of the ship. It is also framed longitudinally with spacing of these deck beams so that dual truck wheels will at all times be supported by a structural member. The main deck plating is of 7/16 inch figured floor plating for maximum grip to complete a structure which technicians assert virtually amounts to a floating bridge structure.

MAIN POWER PLANT OF THE "M.R. CHESSMAN" is shown in this cut of the engineroom. The unit to the left, appearing almost larger than the Union Diesel main engine, is the Cyclotherm steam heating boiler, many times larger than necessary but readily available out of surplus when others were not.



FORWARD AREA OF ENGINEROOM shows among other things the two 5TCB Air King air compressors manufactured by Worthington Pump and Machinery Corp.



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BOILER Cyclotherm, Automatic, Package Type

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Fish Net Guard

During commercial fishing season the river at this point is literally filled with fish nets. The propeller guard to keep nets free of the wheel is a simple arrangement of pipe positioned slightly above keel level and carried in form of horseshoe from hull on each side with loop end supported at the rudder post. The theory is that the smooth keel of the ship will pass over the net without injury and as the passage over is completed the pipe guard will hold the net clear from the wheel.

An algae of peculiar color exists in the area. To avoid unsightly appearance of the hull above the water line a light gray color was specified for anti-fouling paint on upper section of the hull. A Portland paint manufacturer, using mercuric chloride as the anti-fouling agent, came up with the answer.

Dining space is provided on the passenger deck to seat 44 people, with a modern stainless steel galley and serving equipment adjacent.

The owner's trial was held on March 25. With the engine turning at rated speed of 320 R.P.M. an average of 11.86 knots was maintained over the measured course to far exceed the contract requirement of 10 knots. Turning at 275 R.P.M. on other runs a speed of 10.75 knots was attained.

Maneuvering ability considerably faster than specified in ABS rules is required on the cross channel run, not only for a fast docking operation, but also to avoid objects running the channel suddenly appearing in dull and foggy weather, and at night, such as fish nets, flotsam, fishing vessels, and pleasure craft. To meet this requirement a Markey type GAY, 10 x 54, full follow up steering gear is installed. Navigation by compass under fog and heavy weather conditions has been foreseen by installation of all bronze unit in the pilot house. Emergency hand steering is instantly available by pulling a locking pin. In place of being aft, the power unit is located directly below the wheel house in the hold and is connected

L. R. HUSSA, President of Albina Engine and Machine Works, the design agents of the M. R. CHESSMAN.

to the rudder quadrant and the steering gear in the pilot house by means of cables, sheaves and reach rods.

Equipment Suppliers

Albina Engine and Machine Works, L. R. Hussa, president, are design agents of the M. R. CHESSMAN. Marine Electric Company, Portland, handled all electrical work under subcontract. All insulation work was performed by Asbestos Supply Company of Oregon. The vessel was built under the rules of the American Bureau of Shipping and in accordance with regulations of the U.S. Coast Guard. American Bureau of Shipping acted as owner's representative and put the ship into class.

All hull paint and anti-fouling paint below the water line is International Paint, supplied by W. J. "Bill" Robbins. Special gray anti-fouling paint above the water line was supplied by S. and S. Paint Manufacturing Company, Portland. Exploded vermicilite, produced under the trade name of Zonolite, is applied to deckheads in some spaces to keep the steel from sweating. Lubricating oils on the CHESSMAN are supplied by The Texas Company.

A synthetic base vehicle, hard but flexible, proven by tests to outwear varnish paint base, also supplied by S. & S. Paint Manufacturing Company, coats the car deck.

Main engine is a single screw, single end drive 6 cylinder diesel, 16 x 20½, 800 HP, Model Z-6, manufactured by Union Diesel Engine Company.

Other equipment aboard includes:

Auxiliary Diesel Generators — Two 25 KW, 115 volt DC, Model-25, Manufactured by U.S. Motors Corp.

Air Compressor—Two 5TCB Air King, Manufactured by Worthington Pump and Machinery Corp.

Pumps — all supplied by Consolidated Services, Inc., Seattle. Fire and general service pump, bilge pump, fuel oil pump, —Buffalo. Emergency diesel fire pump—Buffalo driven by Buda diesel. F. W. & S. W. pressure pumps — Burks. Fuel Oil Pump—Blackmer. Hot water pump—TACO.

Engine Room Fire Fighting System—Walter Kidde Co. CO2 Equipment.

Hand Extinguishers — General Pacific Corp. Floafome.

Steam Heating Boiler — Cyclotherm Marine type, supplied by Consolidated Services, Inc.

Anchor Windlass—Beebe Bros., Seattle, hand hoist.

Anchor—Danforth.

Life Boat Davits—Landley.

Life Boats—Tregoning.

Compass—Atlas.

Engine Room Telegraph—Durkee.

Propeller—Doran right hand bronze.

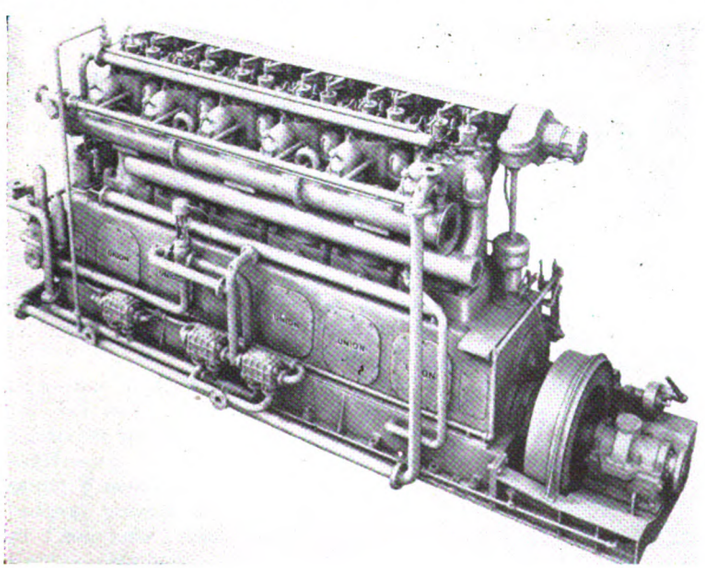
Pilot House window glass and window wipers—Kearfott.

Glass in cabins—Libby-Owens.

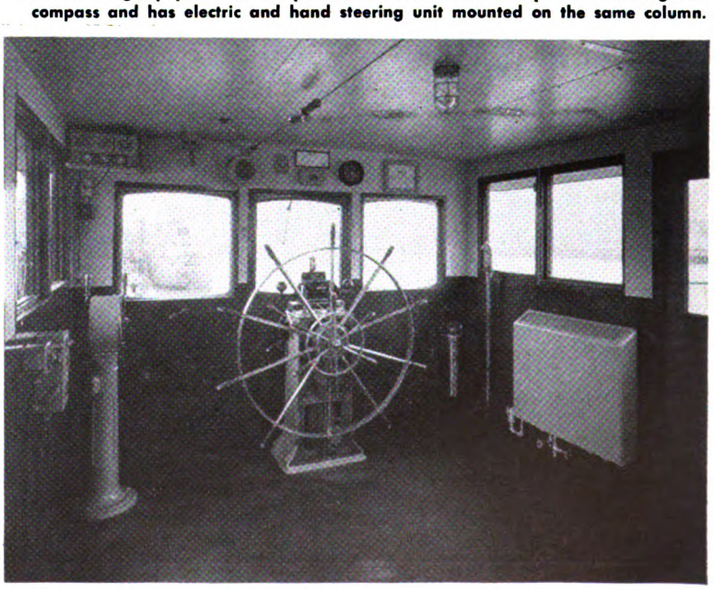
Galley Range—Lang No. 50, equipped with DeLuxe Oil Burner.

(Continued on Page 63)

UNION DIESEL MAIN ENGINE is a single end drive 6 cylinder diesel, 16 x 20½, 800 HP, Model Z-6. On the trial run, with the engine turning up 325 RPM, the CHESSMAN averaged better than 12 knots over a measured course, far exceeding her 10-knot contract requirement.



CLEAR VISION AND SPLIT-SECOND MANEUVERABILITY are the keys to the pilot house design of the CHESSMAN. Kearfott window provides a clear sweep of the horizon and Markey steering equipment gives the swift maneuverability. The steering equipment in the pilot house is all bronze to protect the magnetic compass and has electric and hand steering unit mounted on the same column.



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HOW EFFICIENT ARE YOUR BOILERS?

A simple method for checking and maintaining efficient boiler operation.

By W. B. HILL
Manager, Marine Sales and Service
C. C. Moore & Co. Engineers

The question of boiler efficiency is getting more and more attention as the price of oil keeps on going up.

In the days when oil was 80c a barrel, a stack temperature of 650°F was nothing to bother about particularly. But the present price of oil is about three times that high, and I've yet to have the pleasure of being assured by an oil company salesman that there will be no more raises and the price trend is downward.

Some engineers don't know what boiler efficiency they're getting or how to figure it out with fair accuracy. Yet, it's a relatively simple problem as compared to say picking the winner in the third at Bay Meadows, Jamaica or Hialeah.

To begin with a standard (and that means Texas and Union too) barrel of oil contains 42 gals. and weighs an average of 336#. The regular Bunker C oil has a heating value of about 18,500 BTU's per pound so that with a quick flick of the slip stick you can figure you're buying approximately 6,220,000 BTU's per barrel. To know how much of this is going directly into steam, you have to know:

1. The analysis of the gases at the boiler outlet—CO^2, O^2 & CO.
2. The temperature of the gases at that point (you can assume a fireroom or inlet boiler temperature of 100°F without being very far off).
3. The specific gravity of your fuel oil to determine the H_2 content (If you've lived right the oil company will have supplied you with an analysis and you can skip this part).

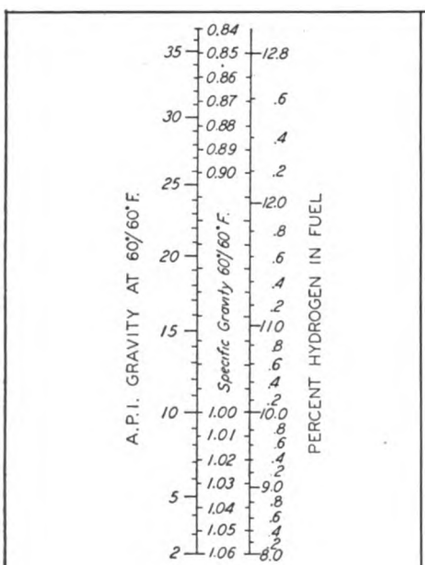


FIG. 1
Relation Between Fuel Oil Gravity And Hydrogen Content

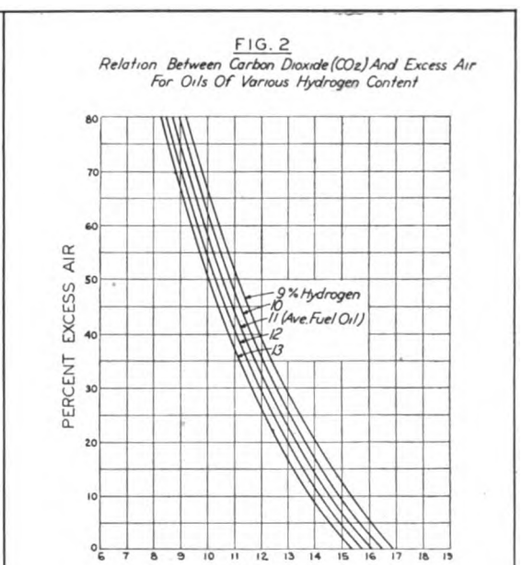


FIG. 2
Relation Between Carbon Dioxide (CO_2) And Excess Air For Oils Of Various Hydrogen Content

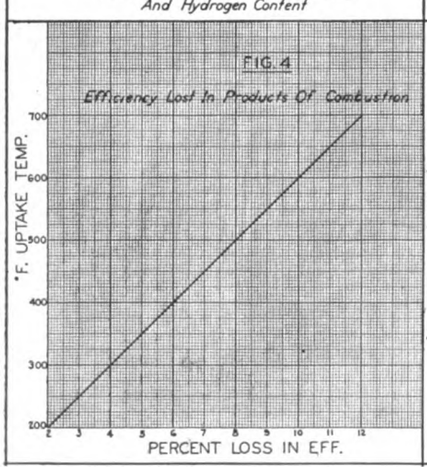


FIG. 4
Efficiency Lost In Products Of Combustion

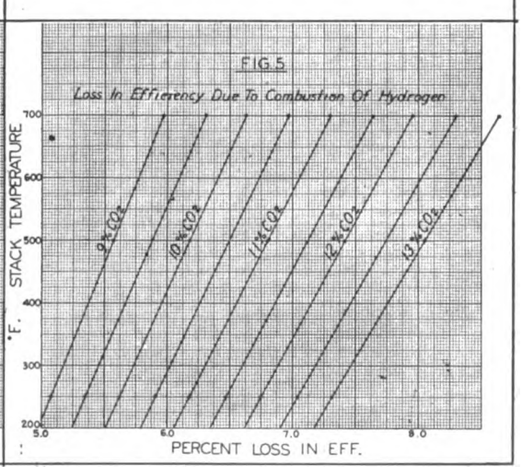
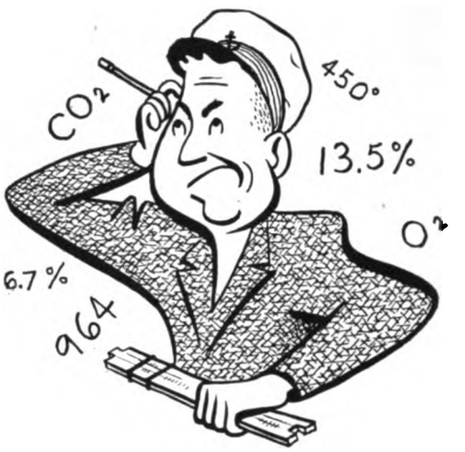


FIG. 5
Loss In Efficiency Due To Combustion Of Hydrogen



4. The amount of excess combustion air being used in the boiler.

When you know these four things you are in the same position as the rich handsome young executive married to a beautiful Phi Beta Kappa blonde who could cook, you've got everything you need.

You start by analyzing the gases with an orsat. You may be a little rusty on this but after a little practice on its three valves and one three-way cock, you'll rattle off a set of readings in less than ten minutes. If you do go wrong the worst you can do is mix up your analyzing solutions. All that means is that you get the Junior 3rd to clean up the orsat and start over again.

Then you go up in the fidley and take an uptake temperature reading unless you have a pyrometer mounted on your control board and can get the reading in style. From now on it's all skull work you can do topside.

For example let's assume you have oil with a specific gravity of .964. From Figure 1 you will see the average hydrogen content is 11.0%. Then let's say the flue gas analysis from your orsat was as follows:

CO_2 — 13.5%
O_2 — 2.8%
CO — 0.0%

From Figure 2 using 13.5% CO_2 and 11% hydrogen, you determine the excess air to be 17%. Further assuming you have an uptake temperature reading of 450°F, then Figure 3 will show a loss in efficiency due to excess air of 1.1%.

Using Figure 4 and 450°F again, you can see charging 7% loss to the products of combustion. That is how much it costs you to have the gases leave the boiler hotter than they entered.

It's also a losing proposition when you burn the hydrogen in the oil. There's nothing you can do about this but take it on the chin. So, using 11% hydrogen content and 450°F stack temperature, determine in Figure 5 that hydrogen has you in the red 6.7%.

Now you're almost but not quite through losing efficiency. You may not believe it but there are a few imponderables and unascertainable quantities which the boilermakers haven't pinned down yet. Things like leaving peephole doors open, steam leaks, etc. aren't in-

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cluded. Frankly, what is included in this loss outside of radiation isn't known. So it's all lumped into what is known as Radiation-and-Unaccounted-For-Loss or R & U. This figure may vary from 1 to 4% but for the average job and good enough for our purposes let's say the R & U is 1.5%. Now we have the following:

Loss due to excess air	1.1%
Loss due to high stack temperature	7.0%
Loss due to burning hydrogen	6.7%
R & U	1.5%
Total Losses	16.3%

Subtracting this from 100% gives you the answer that 83.7% of your BTU's are going into steam. From here on it's your job to watch the CO_2 uptake temperature and the oil you buy so you can get the best out of what you've got. Once again remember this isn't the way the ASME would run a boiler test, but at the same time the answer you get won't be too far off. Keep your CO_2 up.

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Bethlehem Completes Eight Carriers for Ore Steamship

A fleet of eight new vessels, the largest and fastest bulk ore carriers afloat, will be in complete operation by the latter part of this summer and will start bringing up ore for the Ore Steamship Corporation's new Venezuelan development next year. The ss BALTORE, last of the eight sister ships built by Bethlehem Steel Company's Sparrows Point shipyard, should be ready for delivery by the middle of August.

The first vessel in the group was the ss VENORE, launched January 22, 1945. At regular intervals she was followed by the CHILORE, MARORE, FELTORE, LEBORE, SANTORE and CUBORE. The first six already are in service on the Chilean run. The CUBORE, launched last February 18, is scheduled to be delivered in about two months.

The new ore carriers are the biggest vessels ever built in the port of Baltimore, according to J. M. Willis, general manager of Bethlehem's Shipbuilding Division in the Baltimore district. They have an overall length of 582 feet 4 inches, a beam of 70 feet, and are capable of carrying 402,000 cubic feet, or approximately 24,000 tons of iron ore. Cruising speed is 16 or 18 knots under full load.

The new carriers are equipped with the highest-pressure steam propulsion machinery ever installed in any cargo vessel in this country. The turbine operates on steam of 750° F and 1450 lbs. per square inch pressure. They also feature the largest steam-reheating marine installation ever built.

Loading and unloading will be entirely by shore equipment, thus eliminating any space and weight-consuming deck machinery for that purpose. Normal loading time varies between 1½ and 2½ hours and cannot be cut any further as it is governed by the amount of ballast in the ship at the beginning of the loading operation and the speed with which this ballast can be pumped out. Unloading with 17-ton grab buckets normally requires about 24 hours.

Due to the large size of the vessels, unusual provisions have been made for mooring. These include nine large steam mooring winches, in addition to the conventional securing fittings. All mooring is done with heavy steel wire rope.

Under normal conditions the ships have a complement of 48. Most modern accommodations are provided both for officers and crew. Not more than three men are berthed in any room and each room has its individual toilet and shower. Large lounges and recreation rooms are available both for officers and men and all quarters are heated and ventilated by motor-driven fans. Power ventilators are also fitted in engine, boiler and pump rooms.

Completely electrified equipment is used in galley, laundry and refrigerator compartments. A modern hospital with special isolation ward is located amidships. The construction of the vessels conforms to modern fire-proof standards in all details.

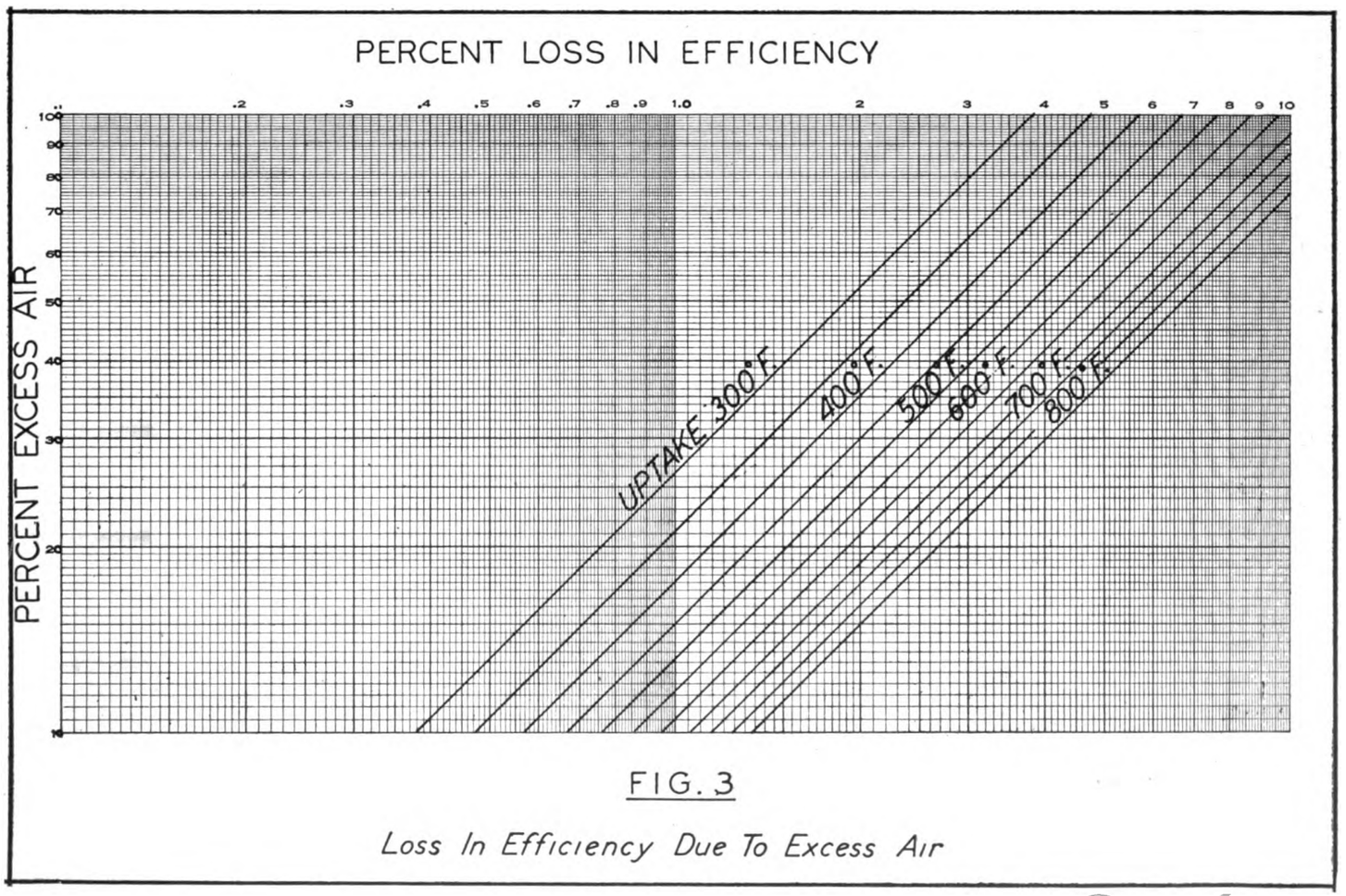

FIG. 3

Loss In Efficiency Due To Excess Air

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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

Radar and Fire Fighting Topic Of San Francisco Engineers

Radar and fire fighting were discussed and pictured at the May meeting of The Society of Port Engineers, San Francisco, when Ets-Hokin & Galvan arranged the program, which consisted of an illustrated talk on radar by Charles T. Haist of the electronics department of the General Electric Company, San Francisco, and a picture presented by Harry B. Allen of the Ets-Hokin firm titled "Fire and Ice" prepared by the C-O-Two Fire Equipment Company. Ets-Hokin & Galvan are marine representatives for both C-O-Two and the General Electric electronics department.

At the next meeting, June 3, Bailey Meter Company will present the program. The subject will be on meters and combustion control as applied to marine work and the speakers will be V. A. Rumble, San Francisco manager for Bailey Meter Company and P. M. Harris, who handles marine sales and service for that firm in that city.

It is announced that Elmer Schweitzer has been transferred from the New York office of States Steamship Company to be assistant port engineer at the San Francisco office.

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New York Friends Give Waller Farewell Dinner

O. H. "Bunk" Waller, port engineer for Lykes Bros. Steamship Co., New York, was given a farewell dinner by some forty friends at the Fireplace Inn on April 28th. After being stationed in New York since 1941, Mr. Waller was transferred May 1st to the Houston, Texas office of Lykes Bros.

As tokens of the esteem his New York friends hold for him, "Bunk" was presented with a movie camera, projector and screen. William Richards made the presentation.

On the committee making arrangements for the dinner were: Bud Fisher, Ben Lockett, George Tollefsen and Bill Richards. Frank Morton served as master of ceremonies.

The following men attended the dinner: Captain Alberg, Guy L. Bennett, Bill Burke, Jr., Henry Baker, Henry Cable, Warren Corbett, B. C. Edwards, John Farrell and Louis Farrell.

Sam Filgo, Bud Fisher, F. W. Gaines, Bob Howard, Perry Haynes, Jack Hays, Arthur Ivey, Ben Lockett, Bill May, Jim Mulcahy, Herman Minnekine, Frank Morton, John O'Malley, Bill Nichols.

Tom McCann, Jr., Jim Pierce, Joseph Ruff, Bill Richards, Don Scott, Harlan Scott, Val Savage, Phil Schwartz, H. B. Saltsman, Perry Sisler, Lucien Paill, John Thompson, E. J. Tracy and Jim Wilson.

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Active Calendar for Los Angeles Port Engineers

Members of The Society of Port Engineers, Los Angeles, gathered a number of times late in April and early in May, first at the Biltmore Hotel, Los Angeles, for their first annual dinner dance, then for their regular meeting May 5, again on May 6 for a tour of the harbor aboard the Red Stock tug RELIEF and, finally, on May 7 for inspection of the American President Lines' new ss PRESIDENT WILSON on the day before she sailed on her maiden crossing of the Pacific.

At the dinner dance, attended by eighteen couples, the party assembled first in the hotel suite of the Todd Shipbuilding Corporation and then on to the Biltmore Bowl for dining and dancing.

Gulf Engineering Company, New Orleans, presented the program at the May meeting, when S. V. Massimini, president, and Robert W. Kendrick, manager of the firm's feedwater engineering department, demonstrated their "turbolizer", for use in the circulating tubes of ships' boilers to cut, by 50% the steaming-up time.

George Hoxie, port engineer of American President Lines at Los Angeles harbor, was host to the members on the inspection tour and buffet dinner aboard the WILSON.

At their business meeting, the Los Angeles engineers, voted to dispense with programs at the July and August meetings and, in lieu of one hold a barbecue for members and families.

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Northwest Engineers Discuss Cycloidal Propulsion

Cycloidal propellers and ships that turn on a dime, spotlighted through the use of slides and motion pictures, were graphically illustrated and described at port engineer meetings in Seattle and Portland in April, by Henry J. Kirschner, sales engineer, Pacific Car and Foundry Company, Seattle.

Speaking at Seattle on April 14, and at Portland on April 15, Kirschner reviewed the history of development of cycloidal propulsion from the early Voith-Schneider design to the progress being made with Kirsten design developed at Pacific Car and Foundry plant and installed on an LSM and on tugs at the Everett Pacific Shipbuilding and Dry Dock yard at Everett.

Slides were used to amplify drawings showing the principles of cycloidal motion, mechanisms involved to gain rotor motion of blades and attain greatest efficiency from cycloidal propulsion, and to picture types of vessels in a category ranging from passenger ships through ferries, power barges, tugs, etc., equipped with cycloidal propellers.

The motion picture is a recent release picturing harbor tugs responding instantly to crash stop tests; spinning immediately about and returning on reverse course in vessel's own wake; turning through 360 degrees in a circle of diameter but slightly longer than length of ship; and through other maneuvers to dramatically occasion the expression "ships that turn on a dime".

Brought out in the discussion was that, because cycloidal propellers serve for steering as well as propulsion, economies are effected in weight and construction costs.

SO LONG TO AN OLD FRIEND—O. H. "BUNK" WALLER stands in the entrance to the "SS BUNK WALLER" with gifts in hand, received from forty-some-odd friends who gave him a farewell dinner.

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The Societies of Port Engineers

THE SOCIETY OF PORT ENGINEERS . . . San Francisco—top row, left to right: Ets-Hokin & Galvan night at the Port Engineers with C. TODD HECKER, Sales Manager of Ets-Hokin & Galvan; LOUIS ETS-HOKIN, President; HARRY B. ALLEN, Marine Representative; MARSHALL T. J. GARLINGER, Assistant Superintending Engineer, ATC; MAURICE ANTOINE, Electronic Supervisor, Ets-Hokin & Galvan; CHARLES T. HAIST, Superintendent Electronics Department General Electric Company and R. T. (MIKE) WRIGHT, Superintendent Ets-Hokin & Galvan.

Top row right: COLONEL W. E. MOORE, Assistant Chief of the U.S. Army Transport Corps and HUBERT KEMPEL, Naval Architect of the ATC, both in San Francisco from the national capital in connection with the conversion of Army transports. Extreme right is PHILLIP THEARLE, Superintending Engineer of the ATC at San Francisco and President of The Society of Port Engineers, San Francisco.

NORTHWEST PORT ENGINEERS . . . second row, left to right: HENRY J. KIRSCHNER, Sales Engineer, Pacific Car and Foundry Company, principal speaker at Puget Sound and Columbia River Port Engineer meetings in April; S. K. SMITH, Principal Surveyor, American Bureau of Shipping, Seattle; W. H. HOSKIER, San Francisco, Manager, Marine and Export Division, Quaker Pacific Rubber Company; R. D. PETERSON, Pacific Car and Foundry Company; H. E. LOVEJOY, Puget Sound Freight Lines; H. V. MOORE, Matson Line. Lovejoy is Chairman of the Board of Governors; Moore is President of the Society of Port Engineers of Puget Sound.

SOCIETY OF MARINE PORT ENGINEERS, NEW YORK, N.Y., Inc. . . . . third row, left to right: DR. ALVIN C. PURDY of Bull & Roberts, Inc. addressed the April meeting on the subject of Feedwater Control; JOHN WESTBERG of Hagan Corporation speaking on Combustion Control at the April meeting (Mr. Westberg's paper will be found in the LOG for July).

LOS ANGELES SOCIETY . . . . third row, photo to right, S. V. MASSIMINI (left), President, and ROBERT W. KENDRICK, right, Manager, feedwater engineering dept., Gulf Engineering Co., Inc., of New Orleans, who were the sponsors of and speakers at the May 5 meeting.

Bottom row, left, gathered around a demonstration boiler are members of the Society of Port Engineers, Los Angeles, witnessing the action of the "turbolizer" at the regular monthly meeting on May 5. Comparative steaming-up times were demonstrated with a set of boiler tubes, one fitted with the "turbolizer," the other without, and heated by alcohol flame.

Bottom row, right, in the wheelhouse of the ss. PRESIDENT WILSON, members, their wives and secretaries of the Society of Port Engineers, Los Angeles, heard Chief Officer ROBERT SWEETSER describe the Sperry steering apparatus, General Electric radar, and other gear of the ship.

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OPERATING IDEAS

FOR MARINE SUPERINTENDENTS, PORT ENGINEERS, PORT CAPTAINS, AND OTHER OPERATING EXECUTIVES

GETTING THE BEST FROM A FORCED DRAFT SYSTEM

by DOUGLAS C. MacMILLAN
Chief Engineer
George G. Sharp

The air required for combustion on the majority of recent merchant installations is provided by forced draft blowers.

The type of blower used depends upon the boiler installation and upon the owner's or designer's preference. The use of double-cased or gas-tight boiler casings permits higher furnace air pressures and higher boiler ratings, and thereby requires higher blower air pressures. Also, fewer burners per boiler are used than heretofore, which usually results in higher blower air pressures. This increase in pressure has resulted in the use of higher speed motor or turbine driven blowers, and has practically eliminated the steam engine as a forced draft blower drive. The use of motors results in greater operating economy and, in order to keep the initial cost low, speeds have advanced so that the maximum output is now generally specified at 1750 to 2100 RPM, although these have been exceeded in some cases.

The tendency to use higher speeds has resulted in a shift to the use of backward-curved blade centrifugal blowers, even though these are slightly more expensive. The backward-curved blade has a characteristic which is quite suitable for marine application, and in addition, the horsepower is self-limiting at any speed.

One Boiler Out of Service

For most recent merchant installations, there is usually one blower for each boiler. With this arrangement, the boiler and blower are considered as a unit, and the blower must be suitable for all boiler conditions. Since the boilers on two-boiler ships are generally rated for a maximum evaporation of 150 per cent of normal, then the blower must also meet this emergency condition when one boiler is out of service and the other is forced. Also, if one blower is out of service, the other unit (boiler and blower) may be forced in order to maintain power. The 150 per cent normal evaporation on one boiler will give about the same power as 75 per cent evaporation on two boilers, or about 75 per cent power, or about 91 per cent ship speed. Figure 1 illustrates the characteristics of a unit system, where one backward-curved blade blower serves one boiler. For normal operation, the speed is set manually at about 1200 RPM, and the regulation required is obtained by automatic adjustment of the outlet damper or inlet vanes. It will be noted that the horsepower is self-limiting at each speed, and that the motor horsepower is greater than the maximum horsepower required.

Forward Curved Blade Blower

In other installations, the boiler and blower are considered separately, so that if either fails, the other need not be secured.

Figure 2 illustrates such an application, where a forward-curved blade blower is applied to a system where two blowers can serve one boiler (A), one blower can serve one boiler (B), and one blower can serve two boilers (C). In case of a casualty, the performance at the maximum operating points would be as follows:

A—Two blowers in parallel serving one boiler at 150 per cent normal evaporation (Maximum boiler overload), 75 per cent normal SHP, 91 per cent normal ship speed.

B—One blower at maximum motor horsepower serving one boiler, 147 per cent normal evaporation, 73 per cent normal SHP, 90 per cent normal ship speed.

C—One blower at maximum motor horsepower serving two boilers, each at 95 per cent evaporation, 95 per cent normal SHP, 98 per cent normal ship speed.

It will be noted in this case that the horsepower characteristic is not self-limiting, and that the motor may be overloaded if the speed is increased to the maximum when operating under condition B or C. However, a similar arrangement can be used with backward-curved blade blowers, which will be non-overloading.

Three Blower Operation

Other installations have been made using three blowers to serve two boilers, where each blower is generally sized for maximum SHP but not for maximum evaporation. In case of boiler failure, two blowers are operated in parallel on one boiler, with no more power output than either of the arrangements described above. In case of failure of one blower, the output is again no greater. The use of two larger blowers is generally preferred to the three smaller units on the basis of less complication and cost.

In order to provide for operation under various conditions, maximum evaporation, normal, port, etc., the blowers must be provided with some means of control to regulate the delivery in order that efficient combustion will result. On D.C. motor drives, this may be accomplished by providing 30 to 50 per cent motor speed reduction below rated speed by rheostat. On A.C. motor drives, two, three, or four speed points may be provided. A further adjustment of capacity may be obtained by the use of outlet dampers, and this has been the usual arrangement, with the damper position regulated by the auto-

Figure 1.

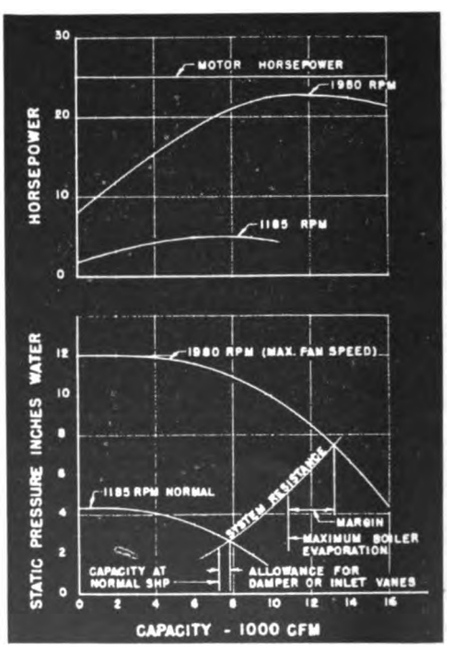

TABLE 1. EFFECT OF EXCESS AIR

CO_2 %	Excess Air %	Uptake Gases °F	Superheated Steam °F	Boiler Efficiency %	Oil Burned #/hr./ Boiler	Air Pressure ins. water
14.1	15	319	738	87.8	1895	2.4
13.4	20	322	750	87.5	1905	2.5
12.4	30	328	768	86.9	1925	3.1
11.5	40	333	780	86.2	1945	3.6
10.7	50	338	790	85.5	1965	4.2
10.0	60	342	797	84.7	1990	4.9
9.5	70	347	803	83.8	2020	5.7

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matic combustion control equipment. A number of recent installations have utilized inlet vane control, which is extensively used in central stations, and dispensed with the outlet dampers. This results in more efficient operation and permits the use of a less expensive motor and speed control. With either the outlet damper or inlet vane arrangement, the motor speed is adjusted manually (seldom automatically) so that the blower delivers about 10 per cent more air than is required, and then the automatic combustion control partially closes the dampers or inlet vanes so as to regulate the air delivery to that required for proper combustion. If automatic control is not fitted, this regulation must be performed manually. On steam driven blowers, where the speed may be regulated by throttling, dampers usually are not fitted, and, therefore, all adjustment of air flow, as required for efficient combustion, is regulated by fan speed.

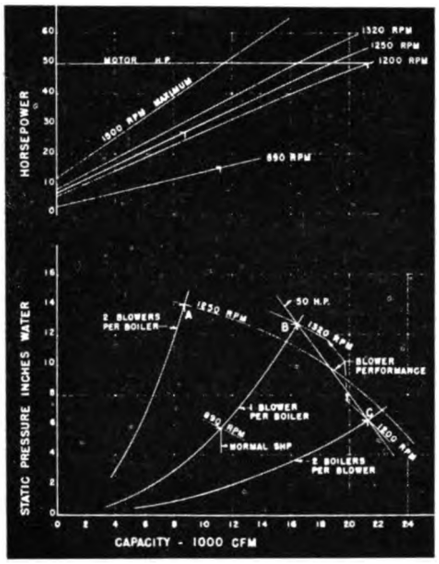

Figure 2.

Regulation of Air

Improper regulation of air can result in some undesirable operating conditions and it is also wasteful of fuel. Table 1 illustrates the conditions which may be expected when operating at about normal horsepower with varying quantities of excess air. This data applies to one type of boiler, but others would have similar characteristics. It will be noted that too much air results in high outlet steam temperature which may be detrimental to the steam piping and turbines, and superheater. An increase of 50 deg. F such as shown here results in a marked drop in the strength of carbon steel as indicated by the allowable stress permitted by the U. S. Coast Guard, 7800 psi at 750 deg. F and 6800 psi at 800 deg. F. The drop in boiler efficiency, and the increase in fuel burned will be noted, along with the increase in blower air pressure and consequently an increase in blower horsepower.

We have noticed a tendency by some operators to use too much fan speed, and consequently a large pressure drop across the outlet dampers or inlet vanes. This results in inefficient operation, more so in the former case than in the latter. Both, however, make the work of the automatic combustion control equipment more difficult, and result in poorer combustion efficiency.

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HOW TO DETERMINE BOTTOM CONDITION FROM YOUR LOG

By EDWARD V. LEWIS
Naval Architect
George. G. Sharp

In a previous article the subject of fouling was discussed in a general way and a method described for estimating approximately the effect of fouling on fuel consumption. An operator interested in maintaining the efficiency of his fleet, however, will endeavor to ascertain more exactly the effect of fouling on his particular route in order to determine the most economical docking interval. This is particularly important since the fouling effect in a particular service may differ considerably from the average figures given, due to variations in the factors previously discussed.

The accurate analysis of log data is a real problem, because of the difficulty in separating all of the influences—wind and weather conditions, variations in efficiency of operation of machinery, etc., as well as fouling. However, it is believed that a careful analysis of many voyages will permit good average figures to be obtained.

Selection of Voyages for Analysis

In starting an analysis of log data, the first step is to make a comparison of weather conditions on the voyages under consideration. There are a number of schemes for evaluating the severity of the weather on the basis of log data. One which takes into account the direction of wind and seas in relation to the ship's course is given by "The Design of Merchant Ships and Cost Estimating." (North-East Coast Institution of Engineers and Shipbuilders, 1940-41). A simpler criterion which is convenient for our present purpose is given by E. V. Telfer ("The Practical Analysis of Merchant Ship Trials and Service Performance, North-East Coast Institution of Engineers and Shipbuilders, 1926-27"). In this classification 0 corresponds to fine weather, 100 to moderate, 200 to heavy and 300 to very heavy weather. By listing the weather intensity obtained from the log for each day of the voyage, an average may readily be obtained for that voyage.

After analyzing the weather conditions for all available voyages, a selection of the particular voyages to be included can be made. Generally, the following voyages should be eliminated, or the irregular days deleted from the averages.

1. Voyages in which the weather index differs appreciably from the average.
2. Voyages (or days) in which an unusually severe storm or hurricane was encountered.
3. Voyages (or days) in which there were unusual variations in speed, e.g., where the ship proceeded at slow speed for a period in order to arrive in port at a certain hour.
4. Voyages (or days) in which machinery difficulties were experienced.
5. Voyages which followed a different route from normal.

Outward and inward portions should be grouped and compared separately. Where the voyages involve several short passages between ports at one or both ends of the route, it is well to leave out the short runs entirely.

In services where there is a wide variation in weather, such as the North Atlantic, it will of course be difficult to select sufficient similar voyages for analysis. Hence, a large volume of log data will be needed.

Determining Fouling Effect from Logs

After the voyages have been selected, with the inward and homeward portions separately, the length of time from the last drydocking to the middle of the voyage should be determined. Average speed, RPM, and displacement may readily be obtained for each voyage. The average shaft horsepower should be determined, preferably on the basis of RPM and displacement, as described in these pages in the January issue of The LOG. Individual days in which the RPM varies appreciably from the average should be deleted, since they have an abnormal effect on the resulting averages.

An example will be given showing the method to be used, the example being typical of services in which the fouling effect is quite different from the average given in the preceding article. In addition to the log data obtained as described above, the following curves prepared from model basin and trial data are needed:

(a) Shaft Horsepower versus RPM for three or four different displacements plotted on one sheet, so that it is possible to interpolate between them.
(b) Curves of speed versus displacement for constant SHP, plotted for several powers at and near full power. (These curves are approximately straight lines).

The accompanying table indicates the procedure to be followed, and the resulting SHP figures (column 8) may be plotted as shown in the figure. This example applies to an actual ship in service be-

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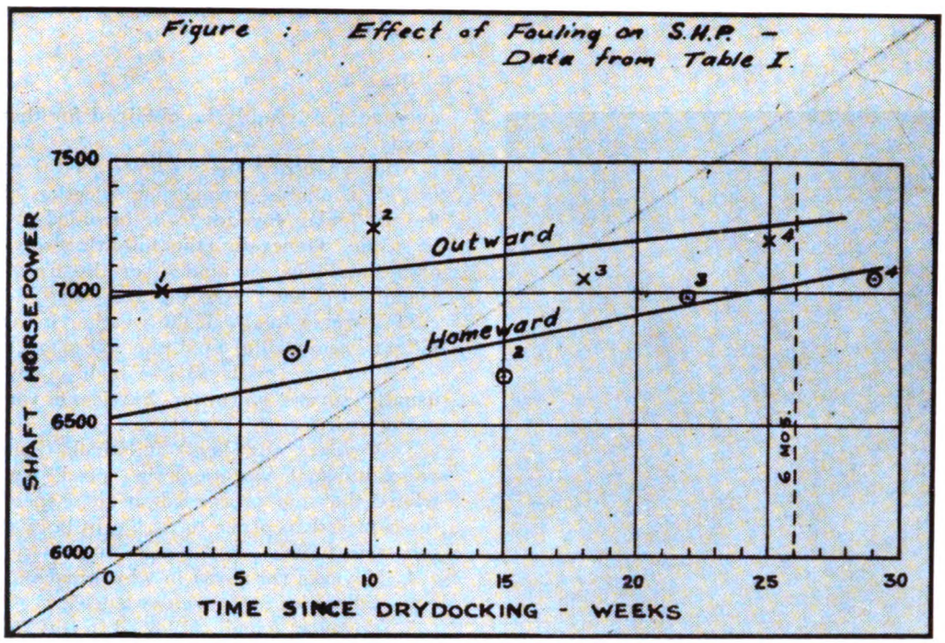

tween New Orleans and the east coast of South America, only the runs between New Orleans and Rio de Janeiro and Rio-New Orleans being analyzed, for four successive voyages between drydockings. The reasons for the wide variation in speed between the outward and the homeward voyages is the large current effect.

In Table I, columns (1), (2), (3), (5) and (6) are obtained from log data. Column (4) is obtained from curves (a) above, and column (7) by means of curves (b). (For this particular ship, the variation in speed is approximately ¼ knot per 1000 tons change in displacement, for the range under consideration). For small changes in speed, column (8) may be obtained by assuming SHP plotted against speed. Column (9) may be worked out as an alternate to column (8), using the same relationship between speed and power.

It appears from the figure that the trend here is for an increase in SHP of about 400 at the end of six months, but an analysis of further log data is called for if conclusive results are to be obtained.

If corrected speeds are plotted, column (9), a similar trend is revealed indicating a decrease in speed of about 0.3 knot at the end of six months if SHP is constant.

Comparison with Previous Article

The reason for very low fouling rate in this example may be the long periods of stay in New Orleans and Buenos Aires, and the short stays in fouling ports such as Rio de Janeiro. Working out the increase in shaft horsepower by the method described in the preceding article, using the Ck for average voyages (curve A), an SHP increase of 1800 is obtained at the end of six months. Hence the average curve does not appear to be applicable to this run.

For the total time covered by voyages investigated, a check of the logs reveals that the ship spent only 15% of its time in fouling ports, the balance of the time having been spent at sea or in ports which are not only unusually clean, but in which scouring effects may also have been present (New Orleans and Buenos Aires). If curve A represents the condition for a ship spending 50% of its time in average or moderately fouling ports, then the above result might be modified by

$$1800 \times \frac{.15}{.50} = 540,$$

which checks reasonably well with the log data.

Most Economical Docking Interval

Having established by thorough log analysis the increase in SHP or loss speed, due to fouling in a given service, the operator may proceed to determine the most economical docking interval. There are at least two possible approaches, depending upon how the ships are actually operated. (1) If power is gradually increased with fouling in order to maintain sea speed essentially constant, the cost of the average added fuel consumption plus cost of drydocking can be compared for different docking intervals. (2) If power is kept essentially constant with increase of fouling, resulting in a reduction in sea speed there will be an increase in fuel consumption due to the longer time spent at sea. Since port time will be reduced, there may also be an increase in overtime cargo handling cost. These costs again must be combined with the drydocking costs and compared for different docking intervals.

Case (2) seems to apply in our example, and hypothetical analysis will be made. It is assumed that the schedule is so close that half of any reduction in port time must be made up by overtime cargo handling. Likewise, at each drydocking, 12 hours of overtime cargo handling is assumed to be necessary because of the time lost. These assumptions should of course be modified in an actual case to suit conditions.

An examination of Table II shows that in our example a docking interval of about 9 months would be theoretically

(Continued on Page 61)

TABLE I
Analysis of Log Data for Fouling Effect

(1) Voyage No.	(2) Ave. time since Dry-docking Wks.	(3) Ave. RPM	(4) Ave. Shaft Horse Power	(5) Ave. Dis-place-ment, Tons	(6) Ob-served Speed, Knots	(7) Speed corrected to disp. of 14100 Tons	(8) S.H.P. corrected to speed of Voyage No. 1	(9) Speed corrected to S.H.P. of 6750
New Orleans-Rio de Janeiro								
1.....	2	103.0	7000	13,900	17.1	17.05	7000	16.86
2.....	10	101.7	6750	14,300	16.65	16.70	7250	16.70
3.....	18	102.2	6720	12,800	17.1	16.8	7050	16.82
4.....	25	101.5	6700	13,500	16.8	16.65	7200	16.69
Rio de Janeiro-New Orleans								
1.....	7	102.0	6780	13,700	17.9	17.8	6780	17.78
2.....	15	101.6	6600	12,300	18.2	17.75	6680	17.88
3.....	22	102.2	6850	14,000	17.7	17.7	6980	17.62
4.....	29	101.8	6720	13,900	17.6	17.55	7040	17.57

TABLE II
Hypothetical Cost Analysis of Dry Docking at Different Intervals

Docking interval, months	4	6	9	12
Average time out of dry dock, months	2	3	4½	6
Increase in S.H.P. to maintain constant speed (see figure)	133.	200.	300.	400.
Corresponding loss in speed, maintaining constant S.H.P., knots	.1	.15	.23	.3
Increase in sea time per voyage, hours	5.	7.5	11.3	15.
Added fuel consumption per voyage:				
Tons	10.	15.	22.5	30.
Barrels	66.7	100.	150.	200.
Added fuel cost per voyage	$200.	$300.	$450.	$600.
Added cargo handling cost, ½ ($100/hr.) — $50/hr.	$250.	$375.	$565.	$750.
TOTAL of above items/voyage	$450.	$675.	$1,015.	$1,350.
TOTAL of above items/year (7 voyages)	$3,150.	$4,725.	$7,105.	$9,450.
Drydocking per year ($3500 each)	$10,500.	$7,000.	$4,675.	$3,500.
Added cargo handling cost (overtime due to drydocking) at $1200 per docking	$3,600.	$2,400.	$1,600.	$1,200.
TOTAL COST PER YEAR OF DRYDOCKING AND RELATED EXPENSES	$17,250.	$14,125.	$13,380.	$14,150.
Alternate Case				
If the rate of fouling were double that shown above: TOTAL COST PER YEAR OF DRYDOCKING AND RELATED EXPENSES	$20,400.	$18,850.	$20,485.	$23,600.

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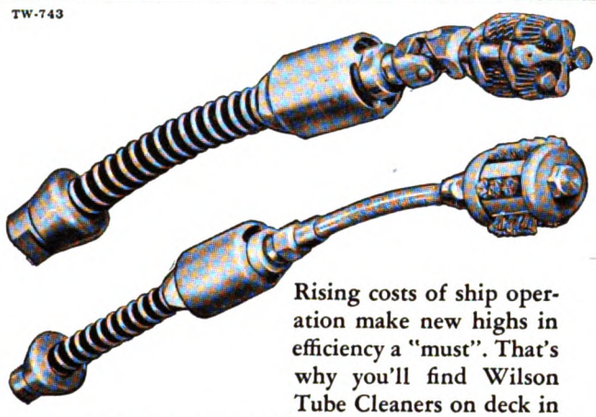

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PORTS

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Alex D. Stewart, Editor

Oakland Harbor Board Opposes Reber Plan for S. F. Bay Lakes

Material compiled by federal, state and local authorities refuting claims made for the Reber plan for dams, locks and dikes in San Francisco Bay to create fresh water lakes has been sent by Claire V. Goodwin, president of the Oakland Board of Port Commissioners to the California delegation in Congress. Mr. Goodwin said proponents of the plan have been supplying members of Congress material on this controversial subject and he desired them to be aware of the arguments against the proposal.

"Our board feels that San Francisco Bay is a God-given asset," Mr. Goodwin said, "and the Reber plan would destroy one of the great harbors of the world. The Oakland harbor board has gone on record as unalterably opposed to the plan."

Opposition to the plan is being organized in the San Francisco Eastbay section by the Maritime and Second Bay Crossing committee of the Oakland Chamber of Commerce, headed by Otto H. Fischer, Union Diesel Engine Company. Clifford D. Allen, vice president of the Oakland harbor board, told a recent organization meeting that the plan, by its very fantasy, is gaining momentum among the uninformed.

Arthur H. Abel, Oakland port manager and chief engineer, points out that the harbors of Oakland, Richmond, Berkeley, Alameda and the port developments of Stockton and Sacramento would be destroyed as regards their present economical usability because craft would have to move through a complicated series of slow, cumbersome and expensive locks. "One well-placed bomb on these locks would make useless a large portion of the port facilities of San Francisco Bay," he declared.

It is pointed out that due to the greatly reduced tidal flow, silt would pile up outside the Golden Gate and eventually bar all entrance to the harbor unless continuing expensive dredging operations were conducted.

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Port of N.Y. Authority Makes New Appointments

The appointments of Charles J. Hafner of Dolton, Illinois, as assistant manager of the Chicago Office of the Port of New York Authority and Albert Lyle King of Baldwin, Long Island as Chief of the newly established Marine Terminal Bureau of the Port, was announced recently by Chairman Howard S. Cullman.

The Chicago office staff, under the management of George Weiss is being enlarged to meet an increasing demand by mid-west shippers for information, rates and routes through the Port of New York of overseas destinations, Cullman said. The Middlewestern service of the New York-New Jersey agency was established on October 1, 1945.

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Mobile Officials Plan "Model Port" Program

Three new ship berths which will increase facilities by 25%, long range stimulation of foreign trade and improvement of waterfront facilities was announced by Mobile authorities recently. This is part of an expansion plan to cost $90,000,000 and is intended to make Mobile a "model port".

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General Heavey to Become Houston Port Director

Brigadier General William F. Heavey, consulting engineer of New York City's Department of Marine and Aviation, will leave New York this summer for an appointment as Port Director of Houston, Texas. The General and his assistants in the Department of Marine and Aviation has been making a study of plans for rebuilding the port of New York.

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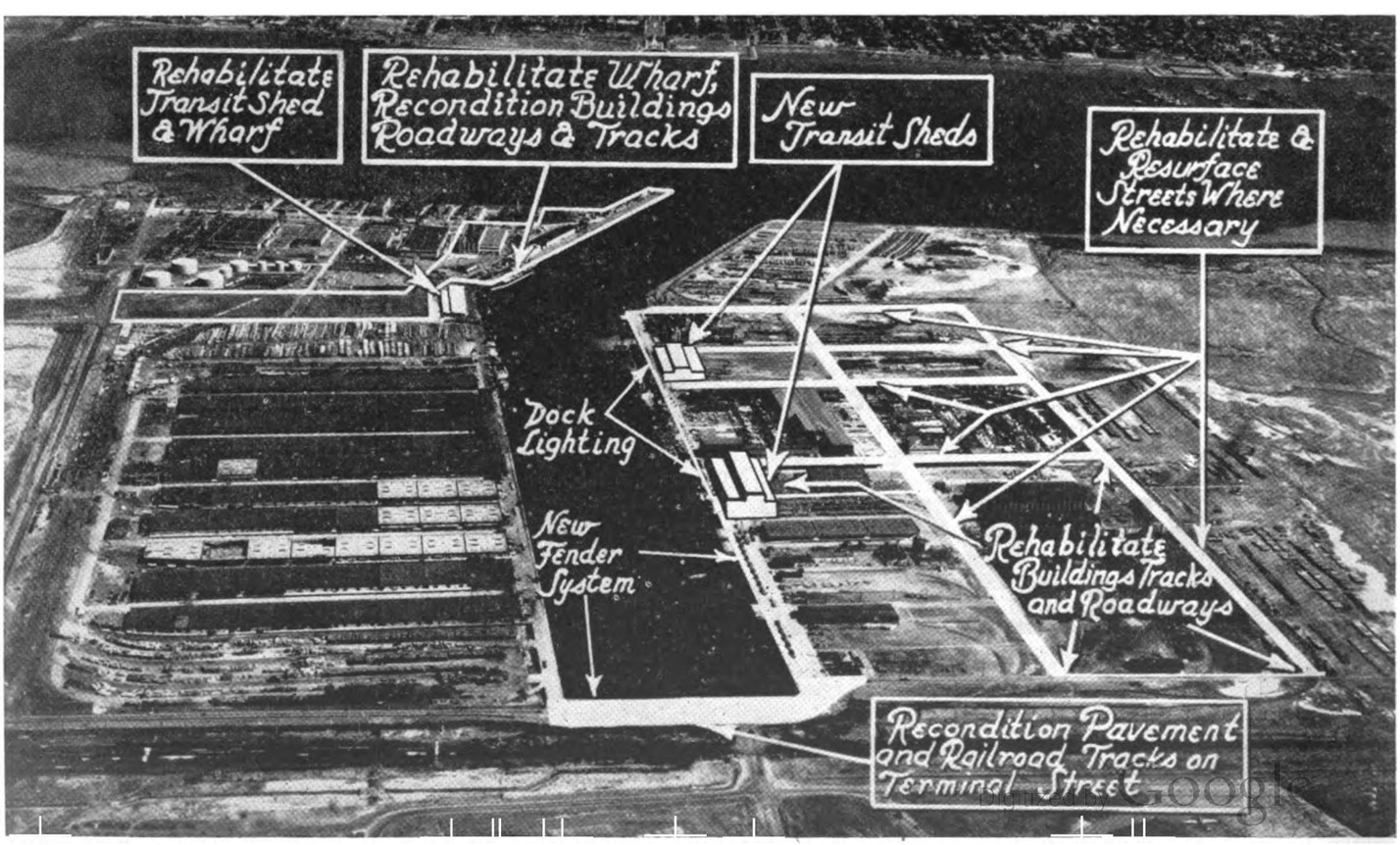
Alabama State Docks Open Eastern Offices

Henry W. Sweet, Mobile port director, recently announced that the Alabama state docks are opening offices in New York and Chicago. The first offices to be opened outside Mobile, will solicit shipping business for the port.

PORT OF NEWARK—airview of the Port of Newark marked to indicate plans of the Port of New York Authority for immediate improvement.



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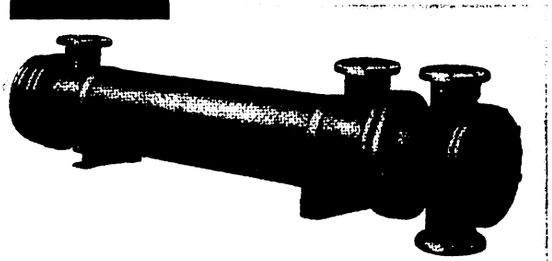

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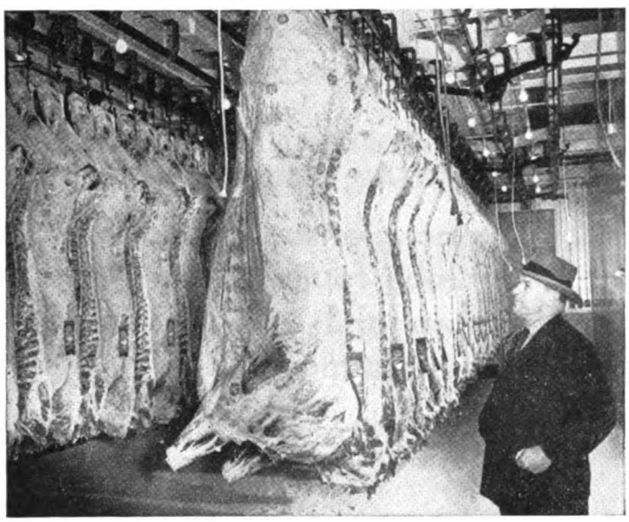

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HARRY SQUIRE who succeeds Frank G. White, Chief Engineer of the Board of Harbor Commissioners at San Francisco.

Squire Succeeds White At Port of San Francisco

Frank G. White, chief engineer of the Board of Harbor Commissioners at San Francisco, has retired after 37 years of service, it is announced by Robert H. Wylie, port manager. Succeeding him until a permanent appointment is made is his assistant, Harry Squire, who has been with the harbor board 36 years.

Mr. White was considered one of the outstanding port engineering authorities of the nation. He was named assistant chief engineer at San Francisco in 1911 and made chief in 1916. During the years he served as consultant on various port projects at Vancouver, B. C., Portland, Santa Barbara, Long Beach, San Diego and at various San Francisco Bay points. He was a past president of the American Association of Port Authorities and a life member of the American Society of Civil Engineers.

Mr. Squire has been Mr. White's assistant since he joined the port staff.

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Bate Succeeds Brennan At Port of San Diego

J. W. Brennan has retired as director of the port of San Diego after nearly 30 years continuous service, having first assumed his duties as harbor master in 1919. His earlier years, too, were spent in close contact with the San Diego waterfront and, at the time of his retirement, he was considered the dean of west coast port authorities. John F. L. Bate succeeds Mr. Brennan as acting port director.

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O. C. Hansen Heads SF World Trade Center, Inc.

O. C. Hansen, head of the San Francisco import-export firm of Frazer & Hansen, has been elected president of the World Trade Center, Inc., an organization working toward erection and operation of a world trade center in San Francisco.

Mr. Hansen, former vice president, succeeds Leland W. Cutler, who has been appointed by Governor Earl Warren to head the state World Trade Center Authority.

Elected to serve with Hansen were Ernest Ingold, vice president, Leland M. Kaiser, secretary and M. A. Cremer, secretary. Mr. Cremer is manager of the San Francisco marine exchange.

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New Orleans Celebrates National Maritime Day

The publicity chairman of National Maritime Day in New Orleans, was Larry Guerin, manager of public relations and advertising for Lykes Bros. Steamship Co., Inc. Members of Guerin's Maritime Day Committee were J. W. Richards, of the Schofield Trading Co., John Ferran, former public relations director of the Board of Commissioners, Port of New Orleans; James R. Bianco, attached to the Eighth Naval District; Sidney Donnaud, advertising manager of D. H. Holmes Co.; James W. Calvert, account executive of Bauerlein Advertising Agency and J. Olin Chamberlain, publisher of the "Weekly Bulletin" of the Port of New Orleans.

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Port of Stockton Reopens San Francisco Office

E. E. Ferrari, port director of the Port of Stockton, Stockton, California, announces the reopening of San Francisco office at 25 California Street, Room 321.

Robert J. Strange, who has been active in solicitation for a domestic and offshore shipping line in San Francisco has been retained as the Port Stockton representative to contact San Francisco-Oakland area domestic and foreign shippers.

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Equipment Aboard The LURLINE

Included among those who served or supplied the Matson Navigation Company's ss LURLINE were:

ALUMINUM COMPANY OF AMERICA — Aluminum facing for Marinite panels and aluminum for Welin lifeboats.

BABCOCK & WILCOX COMPANY—Twelve cross-drum, three-pass sectional boilers, with oil burners.

BALDT ANCHOR CHAIN & FORGE COMPANY—Four Baldt stockless anchors are aboard, two at the bow and two stowed below.

BETHLEHEM STEEL CORPORATION—Furnished the original high pressure turbine, medium pressure turbine and low pressure turbine, one on each shaft. In reconversion, furnished two new tail shafts, drydocked the LURLINE and applied bottom paint.

BIRD-ARCHER COMPANY OF CALIFORNIA—Boiler water is treated by Bird-Archer and no boiler tubes had to be replaced during conversion.

CARRIER CORPORATION—Furnished the complete air conditioning plant for the public spaces, passengers quarters and crew quarters, complete refrigeration plant for the ship's stores and cargo holds.

CRANE PACKING COMPANY—Supplied John Crane Packings for the stern glands, pumps, valves and condensers.

DAHL-BECK ELECTRIC COMPANY—Furnished Charles J. Henschell telephones, also navigation light panels, brass marine lights and brass electric receptacles, fixtures and fittings.

DAVIS ENGINEERING COMPANY—Paracoil feed water heaters.

DE LAVAL SEPARATOR COMPANY—Two new lube oil purifiers.

DIAMOND POWER SPECIALTIES COMPANY — Diamond soot blowers.

E. I. du PONT de NEMOURS & COMPANY—Furnished topside and interior paints and finishes.

EDISON GENERAL ELECTRIC APPLIANCE CO.—Edison-Hotpoint Galley equipment, including fry kettles, ovens and eight ranges.

FORMICA INSULATION COMPANY—Formica top material is on the tables in the veranda, on the dressers, in the passenger quarters, on the edges of the card tables and on many other similar surfaces throughout the vessel.

A. P. GREEN FIRE BRICK COMPANY—Relined the twelve fire boxes with their "Mizzou" 60% alumina fire brick. Refractory work done by the E. J. Bartells Company of California, representatives of the Green Co.

M. GREENBERG'S SONS CO.—Fire hose valves, bronze valves and fittings for the engine and boiler rooms.

GRISCOM-RUSSELL COMPANY—Two distilling plants, each with a capacity of 40,000 gallons of fresh water per day, and an overload of 60,000 gallons.

HERCULES EQUIPMENT & RUBBER COMPANY — Fire hose, deck hose and mechanical rubber supplies for the engine room.

HICKMAN ENGINEERING COMPANY—Miscellaneous instruments.

INTERNATIONAL PAINT COMPANY—Bottom Paint.

JOHNS-MANVILLE CORPORATION—Furnished Alcoa aluminum-faced Marinite bulkheads in all public quarters and staterooms; acoustical panels on the ceilings of public rooms and staterooms to reduce noise.

KEARFOTT ENGINEERING COMPANY—Furnished Fulvu type windows for the Lanai suites; hinged and fixed type casement windows in the public rooms; K-225 type in the "B" deck sitting rooms and special type K-15 enclosure windows on the promenade deck.

WALTER KIDDE COMPANY—Furnished 100% of the ship's original fire fighting equipment—the smoke detectors, the carbon dioxide extinguishers and the Selex fire detecting system. These were overhauled by the firm's northern California representatives, Hough & Egbert Company.

LAMSON CORPORATION—Three baggage conveyors, one of the major improvements aboard the LURLINE to cut down its turnaround time.

LESLIE COMPANY—Two Leslie-Tyfon steam whistles; reducing valves; temperature regulators and pressure controllers.

LORENTZEN COMPANY—Redecked the entire ship, except for painted surfaces, using Hood rubber tile and base, with its own Loralite Magnesite underlayment and Selby, Battersby & Company's "Levelite" and Crossfield Products Company's "Dex-O-Tex" underlayment; in the officers' quarters, relaid some of the original rubber tiles.

LORIMER DIESEL ENGINE COMPANY—Installed new 100 hp auxiliary Diesel driving a 75 KW Ideal generator.

MARKEY MACHINERY COMPANY — Present manufacturers of Cunningham cargo winches installed when the ship was built and overhauled during conversion.

MINNESOTA MINING & MFG. COMPANY — This firm's "3-M" products were used exclusively on the LURLINE in binding the deck tiling and the cork insulation in the reefer boxes.

NATIONAL MALLEABLE & STEEL CASTINGS COMPANY—Supplied the original 330 fathoms of 3⅛-inch diameter cast steel, stud link chain aboard the LURLINE. During reconversion this was checked and found in excellent condition.

THE PARAFFINE COMPANIES, INC.—Pabco boottopping paint.

RADIOMARINE CORPORATION OF AMERICA—All radio telegraph and telephone transmitting equipment, and a radio direction finder.

RAYTHEON MANUFACTURING COMPANY—Navy type Radar.

REPUBLIC ELECTRIC COMPANY—Built and installed entertainment and public address system distributing music and programs throughout the ship from a central control panel.

THOMAS A. SHORT COMPANY—Supplied two 10 KVA Diehl motor generating sets and overhauled and set valves.

SOCONY-VACUUM OIL COMPANY—Lube oil for the refrigeration centrifugals.

SOPAC SHIP MAINTENANCE COMPANY—Scaled the tank tops throughout the ship.

SPERRY GYROSCOPE CO.—Installed new Sperry gyro and overhauled the old Sperry gyro pilot.

STANDARD OIL COMPANY—Lube oil for main engines; fuel oil.

STURTEVANT DIVISION OF WESTINGHOUSE — Eight forced draft turbine-driven fans; 20 small turbine-driven ventilator fans and feed water pump drives. Installed by Bethlehem.

SUBMARINE SIGNAL COMPANY—New Fathometer depth finder.

VAN ARSDALE-HARRIS CO.—New marine type refrigerator doors manufactured by the Jamison Cold Storage Door Company.

WARD LEONARD COMPANY—Electrical equipment in connection with the air conditioning system.

WARREN STEAM PUMP COMPANY—All centrifugal and reciprocating pumps, old and new, furnished by the Warren company and installed, in the original building and in the conversion, by George E. Swett & Co., northern California representatives for Warren. These pumps include those on the Carrier air conditioning system and the Griscom-Russell distillers.

WELIN DAVIT & BOAT—Eighteen of the ship's lifeboats are Welin, 16 being new Alcoa aluminum craft and the older boats of steel; davits, trackways all-aluminum floats.

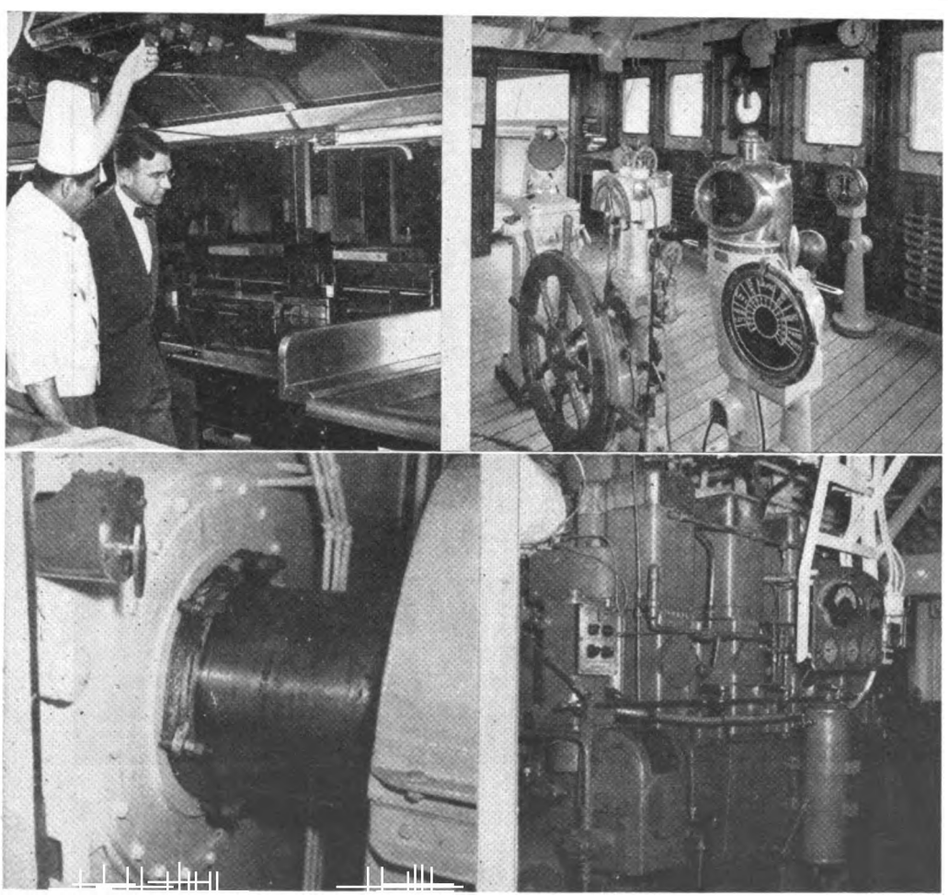
WESTERN ASBESTOS COMPANY — Insulated main propulsion, steam auxiliary, refrigeration, air conditioning units, hull piping.

WESTERN SHIP SERVICE COMPANY—Cleaned the water and oil tanks and the boilers.

WESTINGHOUSE ELECTRIC CORPORATION — Four 500 KW main turbo-generators; eight main air ejectors; all deck and under deck motors and controls and new rheostat controls on forced draft fans.

WORTHINGTON PUMP AND MACHINERY CORPORATION — Original pumps and compressers.

YORK ICE MACHINE COMPANY—Original forward refrigeration equipment.



(Continued from Page 39)

There are two whistles aboard ship, both Leslie-Tyfon, one with a 12-inch diaphragm and the other 16 inches, the largest whistle on the Pacific Coast which is said to be second in size only to the whistle aboard the ss AMERICA.

In the wheelhouse a new Sperry gyro compass was installed during the reconstruction and the old gyro pilot was overhauled. A new Submarine Signal Company Fathometer depth finder was put aboard. The Walter Kidde Company furnished 100% of the ship's original fire fighting equipment—the smoke detectors, the carbon dioxide extinguishers and the Selex fire detecting system—and all this was overhauled during the reconversion by engineers of Hough & Egbert, the Kidde agents at San Francisco.

Top row, left to right: CHARLES GUSUKUMP, executive chef, operating a range switch on one of the eight Edison-Hotpoint ranges in the galley of the LURLINE. With the chef is P. F. CANNON, catering superintendent of Matson; Wheelhouse of the LURLINE: Submarine Signal Company installed a new Fathometer aboard and Sperry Gyroscope Company put on a new gyro compass.
Bottom row, left to right: Stern gland of the port main shaft. John Crane 866 stern gland packing is used on both shafts aboard the LURLINE; New 100 hp Lorimer auxiliary Diesel driving a 75 KW ideal generator.

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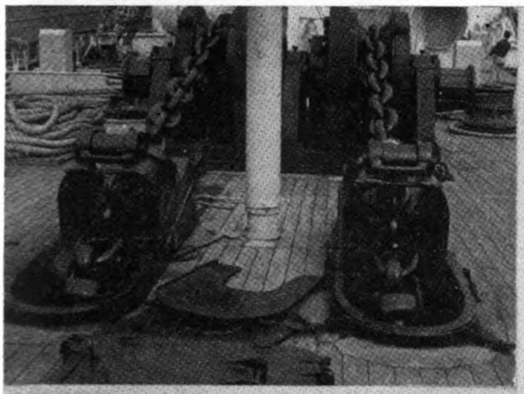
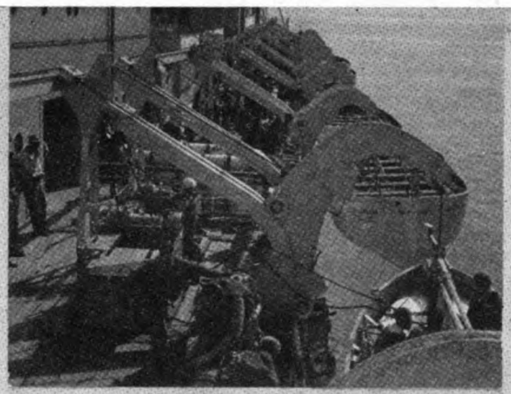
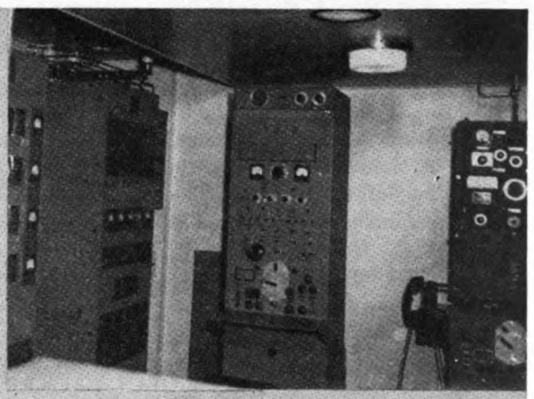
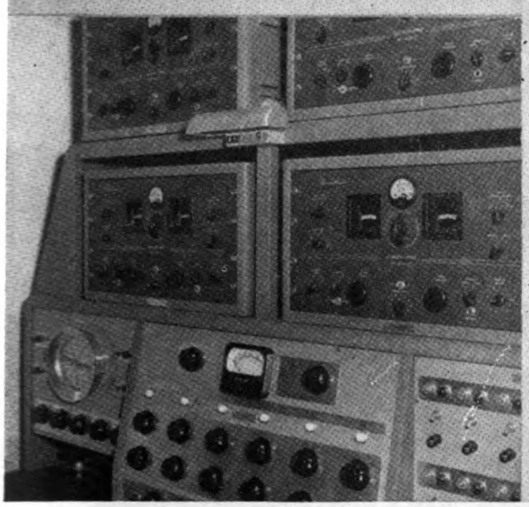
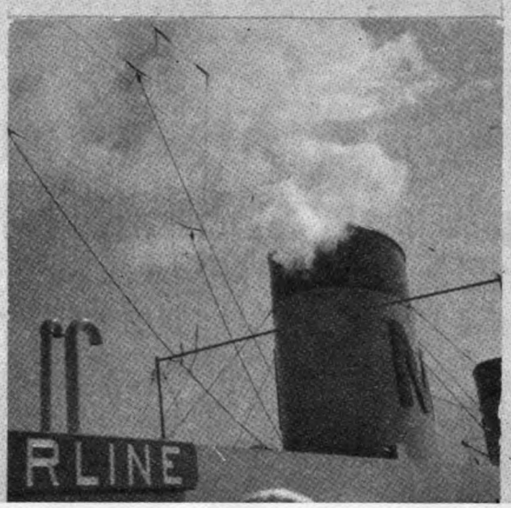
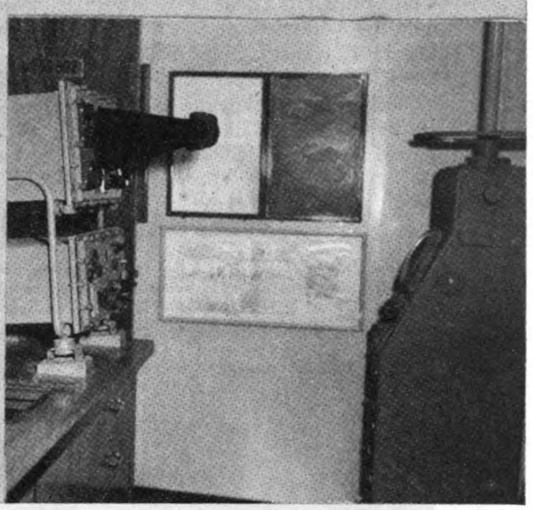






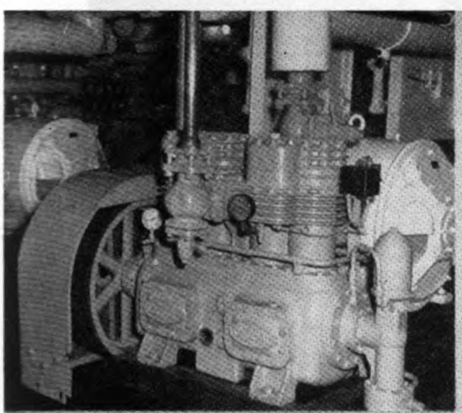
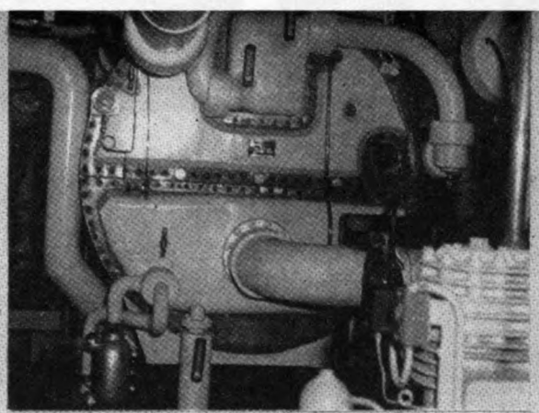
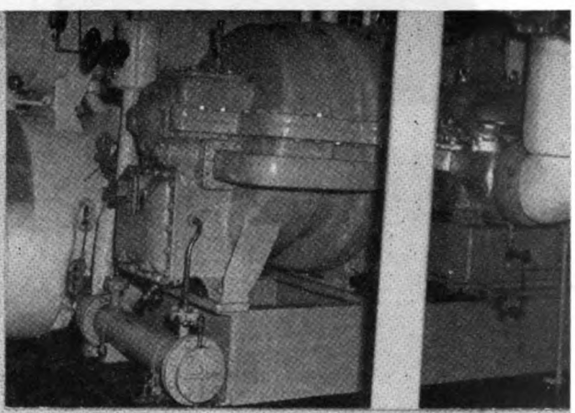
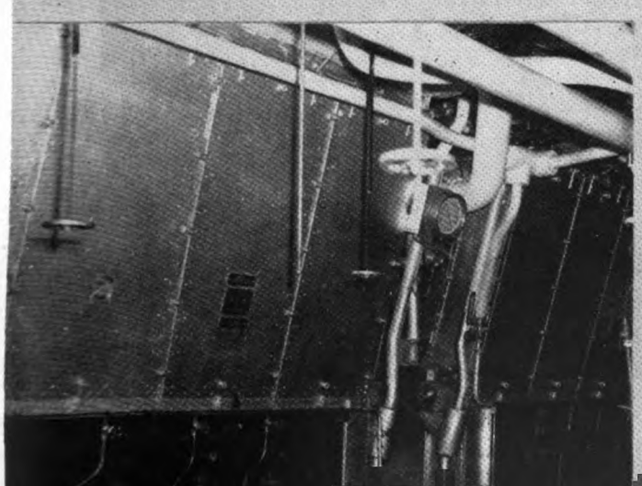
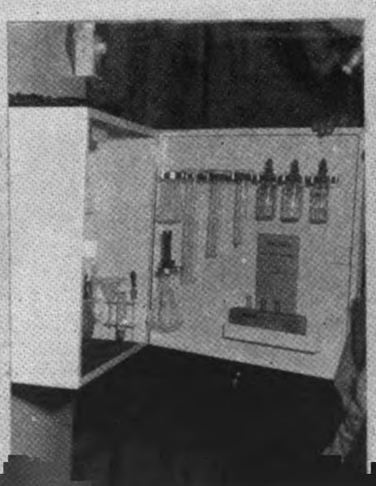
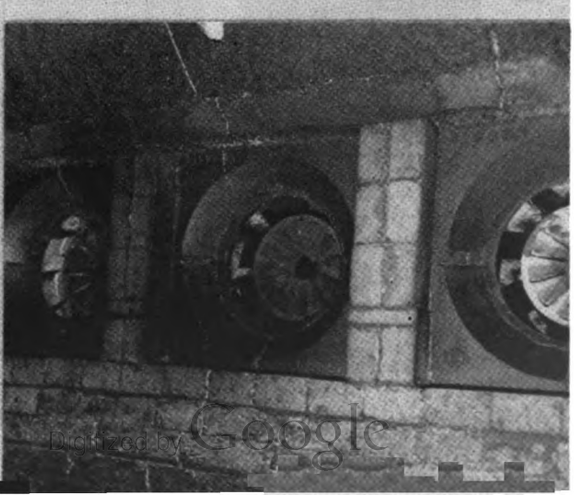


Top row: Naco anchor chain which went aboard the LURLINE when she was built in 1932; American Engineering anchor winch is shown; Welin lifeboats, trackways and davits; Corner of the "radio shack" showing the Radiomarine transmitter and new harbor telephone.

Bottom row: Control panel of the entertainment and public address system built especially for the LURLINE by Republic Electric Company; The two Leslie-Tyfon whistles in action; Raytheon Navy type radar on left and Radiomarine radio direction finder at right.

Aboard The LURLINE

Top row, Ice machine flat: left to right: Carrier cargo refrigeration units; Griscom-Russell water evaporator; Carrier air conditioning centrifuge.
Bottom row: Two of the twelve Babcock & Wilcox boilers aboard; the boiler water treatment cabinet of the Bird-Archer Company of California; front wall, taken from inside of one of the twelve fire boxes, showing Babcock & Wilcox oil burners and A. P. Green Fire Brick Company's "Mizzou" refractory brick.

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Veteran Officers

All the officers of the LURLINE are veterans of Matson service. Captain Frank A. Johnson, master of the ship, was skipper of the old coastwise ss YALE and commanded the MATSONIA from 1935 to 1943. Chief Engineer A. E. Nielsen was chief on the ss MARIPOSA from 1932 to 1947. Anatole M. Gordenev, chief master purser is the son of Captain Mely Gordenev, a Matson officer for 27 years, now master of the ss HAWAIIAN PACKER. Chief purser is Gleason T. Matquise, who held the same post on the MATSONIA for nearly 10 years. Chief Steward is E. A. Gerz, who has been on the LURLINE since her second voyage in 1932; and executive chef is Charles Gusukuma, who joined Matson in 1932 and has been on the MARIPOSA, MONTEREY and MATSONIA.

Now the LURLINE is operating on an "open jaw" schedule alternating between Los Angeles and San Francisco on her five-day runs to Honolulu.

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Griswold Reports on South America Trip

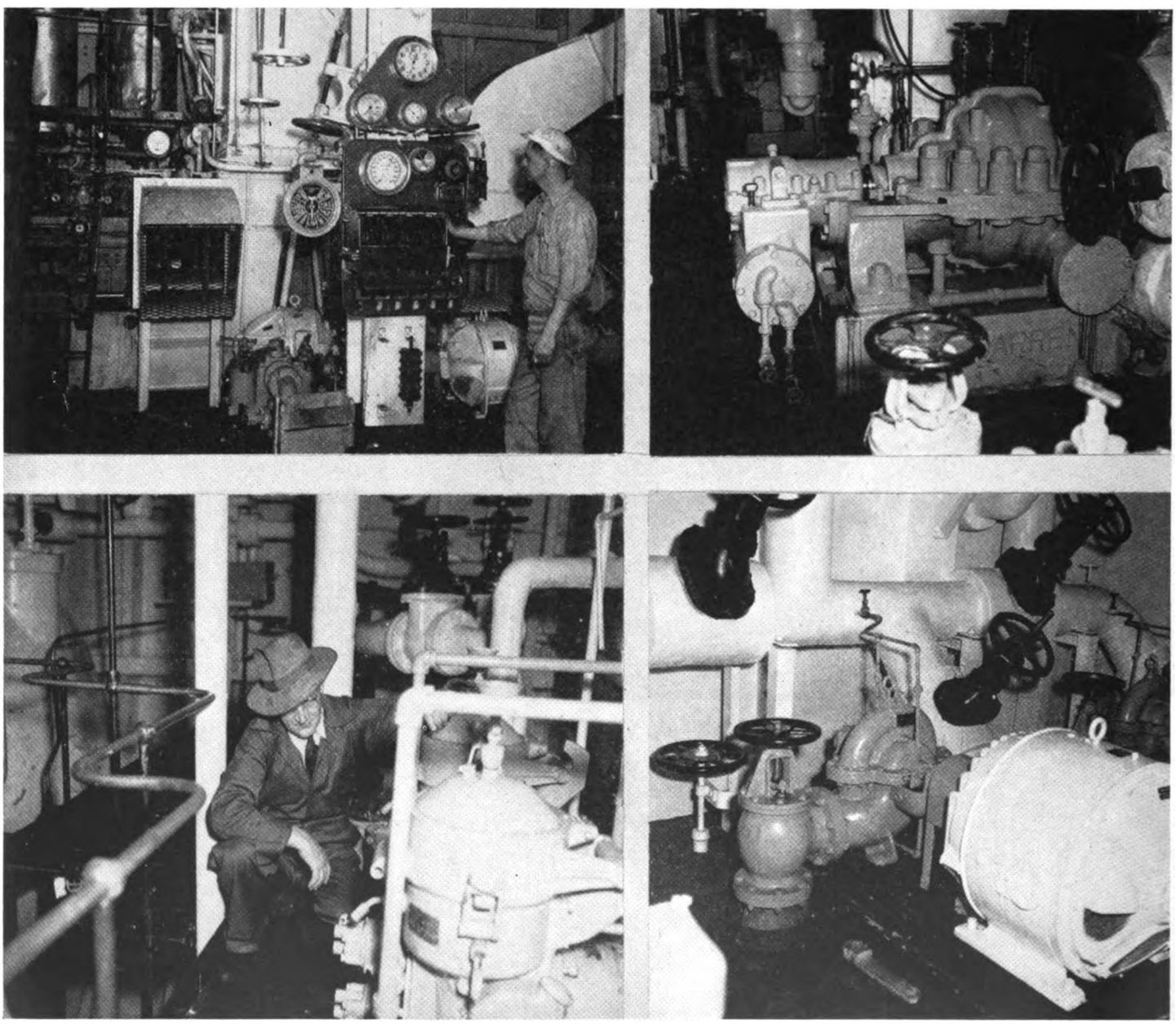
George Griswold, Vice President and general manager of Gulf & South American Steamship Co., Inc., returned recently from a trip to the west coast of South America visiting ports and offices of his company's services.

Commercial conditions in those countries have not improved in recent months, he indicated, and there was no necessity for him to point out the seriousness of the "dollar shortage." Griswold commented on the fact that he did not meet with any real enthusiasm regarding the ERP helping the west coast of South American countries to any material extent. "It is to be hoped that as many items as possible under the program will be purchased in South America. If those appointed to administer this gigantic task are made to realize that South America needs this opportunity to sell her products for dollars, a two-fold benefit will result."

He suggested that our government "stockpile" strategic ores and metals in this country in case of emergency. "We could bolster our defenses and at the same time give valuable dollar aid to our southern neighbors by government purchases of vital ores and metals."

More Equipment Aboard The LURLINE

Top row, left to right: No. 1 fire room showing two of the eight new Sturtevant fo rced draft blowers and the synchronized gang rheostat control built by Westinghouse; right, Original Warren main boiler feed pump installed when the LURLINE was built.
Bottom row: A. E. NIELSEN, chief engineer, inspecting one of the two new DeLaval lube oil purifiers; right: New Warren circulating water pumps in the air conditioning system.



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ON SEA TRIALS . . . The 33,000 ton Moore-McCormack Lines luxury liner BRAZIL is shown on her trials off the Jersey coast after completion of reconversion at the Atlantic Basin Iron Works, Brooklyn.

ATLANTIC BASIN CONVERTS THIRD LARGEST SHIP IN U. S.

Emerging as virtually new, the Moore-McCormack liner BRAZIL, transformed from a wartime troop carrier to a luxury passenger vessel at a cost of over $9,000,000 made her trial run recently. The job done by the Atlantic Basin Iron Works in Brooklyn operated by Blair Holdings Corp., is the largest peace-time commercial ship reconversion ever undertaken in the port of New York.

The 33,000 ton liner, completely rebuilt, refurnished and redecorated, requiring nearly two years of work, has passenger capacity of 519 of which 359 are in first class and 160 in cabin class.

Her twin screws, two General Electric generators and two turbo-electric engines, powered by 8 boilers, give her a cruising speed of 18½ knots. She is 613 feet long over-all, with 80 foot beam and loaded draft of 34 feet.

The BRAZIL will return to regular service on the route between New York and Buenos Aires with Captain Harry N. Sadler in command.

⚓ ⚓ ⚓

How to Determine Bottom Condition from Your LOG

(Continued from Page 52)

most economical. On the other hand if the service were such that the rate of fouling were doubled, the alternate figures at the bottom of the table show that the interval should then be about 6 months.

It should be noted that relatively small changes in the cost of fuel oil, drydocking or cargo handling will alter the picture appreciably. Also in making a decision one should not overlook such additional factors as frequency of painting to prevent hull corrosion, need for examination of bottom, overboard discharges and tailshaft, etc. In any case, because of today's high fuel oil prices the operator will generally find that it pays him to dock his ships more frequently now than in the past.

⚓ ⚓ ⚓

Ingalls to Convert Liner SS RICHARDSON

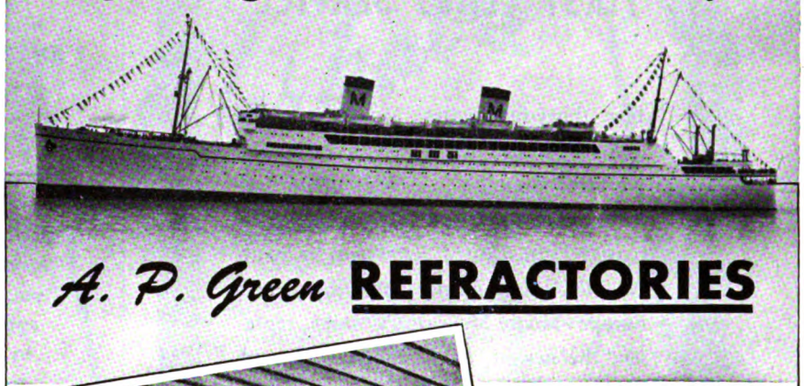
The ss RICHARDSON, largest liner ever to enter a Gulf Coast port, arrived recently in Pascagoula, Mississippi, for reconversion at the yards of The Ingalls Shipbuilding Corp. Cost of the job will be about $5,000,000 and is the largest reconversion on the Gulf and Atlantic coasts. It will require eight months time and furnish employment to a thousand men.

The RICHARDSON was a P-2 type troopship during the war. After conversion the 24,000 ton vessel will be operated by an American steamship line (probably American-Export Lines) as a two-class vessel for 609 passengers; 157 in first class and 452 in tourist. She is 608 feet long, has twin screws, two engines and will travel at a speed of from 18 to 20 knots.

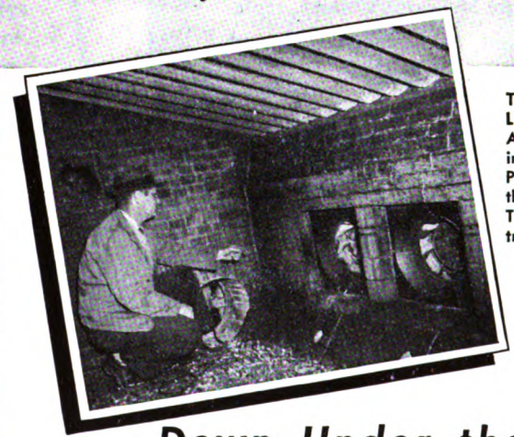
The ship is almost all welded, is modern and fireproof with complete new navigational aids including radar direction finders. She is equipped with the latest automatic cargo-handling devices with small cranes and conveyor belts.

Ingalls' Pascagoula yard is completing the last four of a fleet of 14 large cargo vessels for Lloyd Brasileiro, official Brazilian Government steamship line.

In the LURLINE too!



A. P. Green **REFRACTORIES**



The furnace in one of the LURLINE's boilers showing A. P. Green MIZZOU brick laid in KD-2. A. P. Green SUPER-PLASTIC forms the corbel at the base of the burner wall. This photo was taken after a trial run.

Down Under the Glamour

of the luxurious, newly reconverted LURLINE A. P. Green Refractory materials are on the job. Years of marine service have proved A. P. Green products "tops" in the refractory field. A complete line of fire-clay refractory materials makes it possible to make unbiased recommendations to fulfill any refractory need. Look for your A. P. Green distributor in the classified section of the telephone directory—he'll work with you on any refractory problem—large or small.

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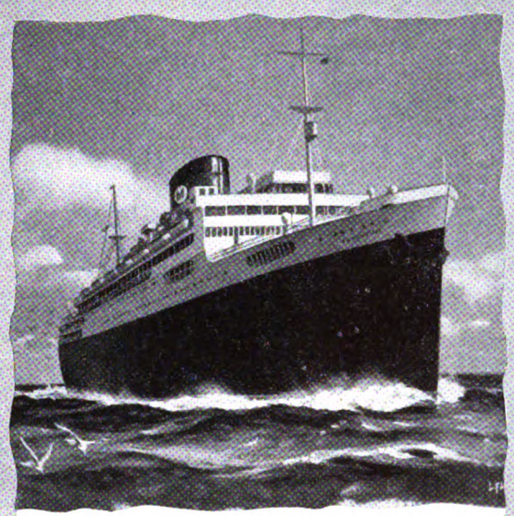

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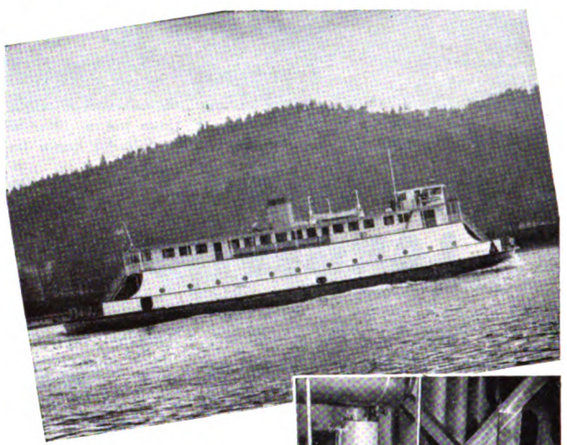

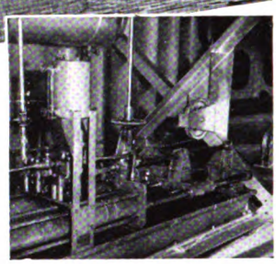

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"THE M. R. CHESSMAN" (new steel ferry described in this issue) installed this popular steering engine for reasons that appeal to all modern boat operators . . . Maneuverability—it puts the rudder **where** you want it **when** you want it . . . Easy and speedy to operate—you can shift full left to right (or vice versa) in 30 seconds, thanks to the quick response and full follow-up power steering of this hydro-pneumatic steerer . . . The combination hand and power steering stand also provides instant availability of emergency hand steering . . . A minimum of upkeep and servicing—as with all Markey equipment.

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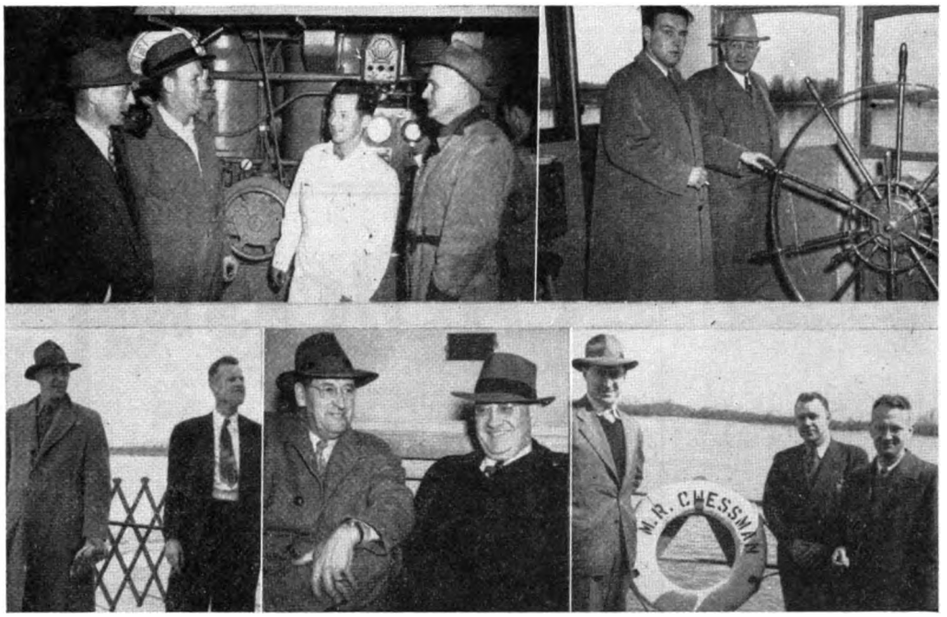


MV M.R. CHESSMAN—new diesel powered ferry for the lower Columbia river. Below are the men who made her. Top row left to right: CLAUDE F. BUTLER, Chief Engineer, Albina Engine and Machine Works, Inc.; SIDNEY W. NEWELL, Vice President, Union Diesel Engine Company; CHARLES FIRTH, Service Engineer, Union Diesel Engine Company; H. ELFVING, Port Engineer, State of Oregon. GEORGE SHAVER, Shaver Transportation Company; CAPTAIN M. A. CLOINGER, Columbia River Pilot.

Bottom row, left to right: H. K. DAHLGREN, Seattle, and H. G. MARTELL, Portland, Service Engineers. The Texas Company; WILLIAM C. MARKEY, President, Markey Machinery Company. LEW RUSSELL, Russell Towboat Company; HOMER SHAVER, Shaver Transportation Company. JACK CARTER, Assistant to the Chief Engineer, and C. W. KELLOGG, Yard Superintendent, Albina Engine and Machine Works, Inc.

mv CHESSMAN

(Continued from Page 45)

Tanks include four 96 inch by 24 inch diameter air flasks, four fuel oil storage tanks with total capacity of 3600 gallons, 1,000 gallon capacity potable water tank, 100 gallon lubricating oil storage tank, 100 gallon lubricating oil sump tank, and 100 gallon capacity potable water and salt water pressure tanks, and hot water tank.

⚓ ⚓ ⚓

Todd Repairs Ship Damaged in Canal

When the 7,038 gross ton British freighter, LAMBROOK left the Todd Brooklyn Shipyard recently after a stay of over a month, she had a new bottom, a large number of hull plates renewed or repaired and underwent voyage repairs.

The LAMBROOK suffered severe damages to her bottom when she went aground in the Cape Cod Canal on March 5th because her steering gear suddenly went out of control. The six year old oil-burner has not been to her home port, Liverpool, for over two years, having been on service between the States and the Orient.

⚓ ⚓ ⚓

DEMA's New Book Now On Sale

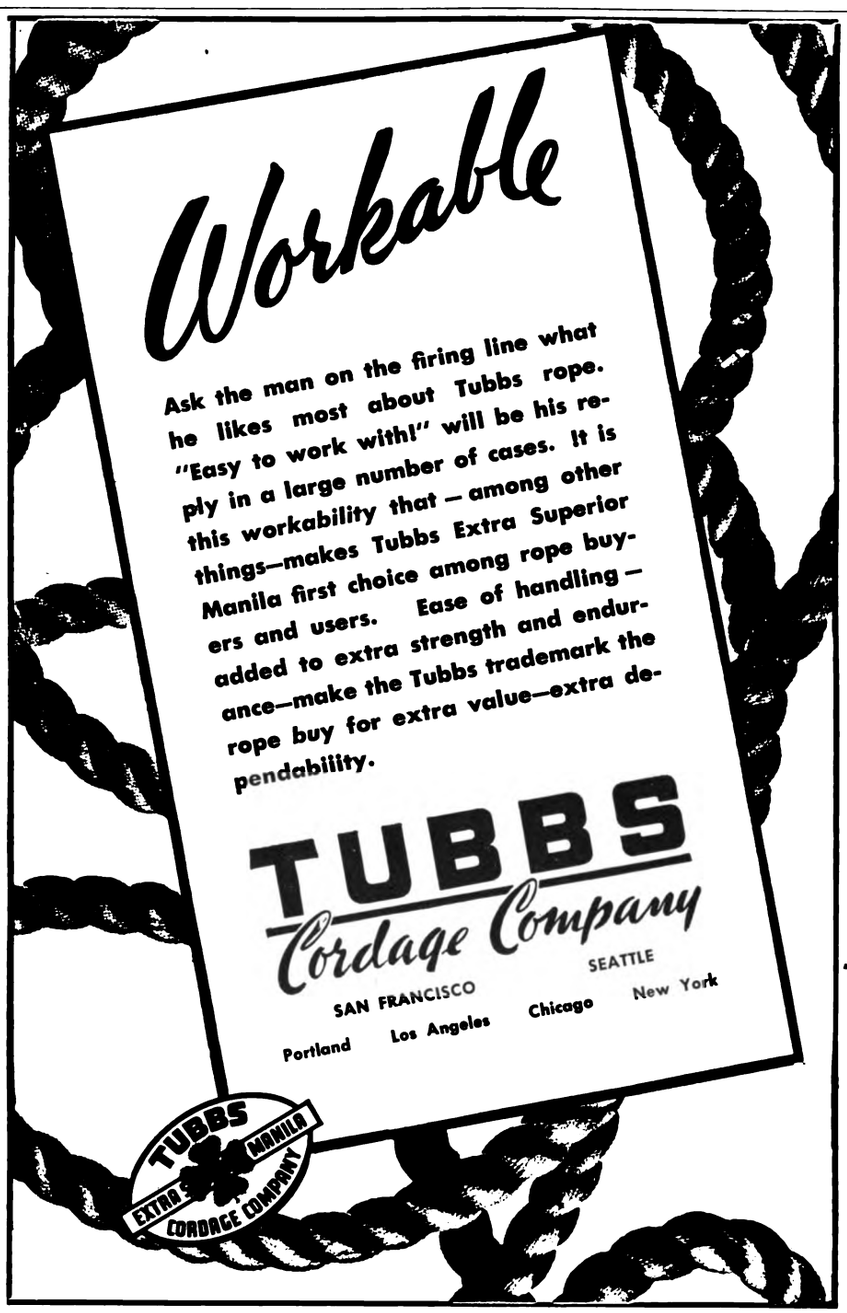
"Marine Diesel Engine Standards" is the recently published book by the Diesel Engine Manufacturers Association for naval architects, shipbuilders and ship operators. The text covers the application, performance, operation and maintenance of marine Diesel engines in the types of craft in which they are commonly used. Fuel oil, lubricating oil, and engine parts and accessories are also discussed.

The 180-page book was written and edited to final form by a committee of engineers, drawn from DEMA's membership. Their task required more than a year for its completion. Fifty-five illustrations, including charts, diagrams and action-pictures of vessels amplify the text treatment.

Scope of the book is indicated by the titles of the chapters: "Definitions," "Standard Performance and Equipment," "Classification and Marine Inspection," "Diesel Engines in Ships," "Diesel Engines in Floating Dredges," "Foundations and Seatings," "Machinery and Engine-Room Arrangements," "Propellers" and "Vibrations."

An "Appendix of Useful Information" contains formulae, tables and conversion data to round out the book of standards.

Copies may be procured from the Diesel Engine Manufacturers Association, One North LaSalle Street, Chicago 2, Illinois. The price is $5.00.



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"Speed was increased!"

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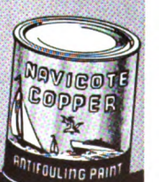
"glad to reccommend..."

*LIFE Magazine — Jan. 5, 1948

S.M. SENSATION OF THE SEA



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EQUIPMENTALK

Marine Manufacturers Tell Their Stories . . .

Minnick Succeeds Davidson As Shell Marine Engineer

Appointment of J. H. Minnick as marine engineer of Shell Oil Company's lubricants sales department for the Pacific Coast territory has been announced by A. L. Wiest, department manager. Minnick will replace C. A. Davidson whose retirement in July terminates a 20-year association with the marine industry as a representative of Shell.

"Ham" Minnick is no newcomer to Pacific Coast shippers. Following graduation from the Massachusetts Institute of Technology in 1931, he joined the engineering staff of the Matson Navigation Company and for five years served aboard various vessels under the Matson banner. In 1936 Minnick started with Shell as a mechanical engineer at the Wilmington Dominguez (California) refinery where he was engaged in engineering design, operation, and maintenance of mechanical equipment.

During World War II he attained the rank of Commander in the U. S. Naval Reserve and served as chief engineer on various units of the Pacific Fleet, including the anti-aircraft cruiser, U.S.S. TUCSON, to which he was ordered as commissioning engineer in 1944 and on which he served during the last stages of the war.

As marine engineer with Shell, Minnick will be responsible for marine lubrication service on the West Coast. He will make his headquarters in San Francisco.

C. C. Moore Carries Dampney Co.'s Thur-ma-lox

Stocks of Thur-ma-lox, a high-temperature coating manufactured by The Dampney Company of America, are carried by C. C. Moore & Company, Engineers, at San Francisco, Portland, Los Angeles, Seattle and Phoenix.

The Dampney Company manufactures Apexior, also a rust preventative, at its Hyde Park, home plant. Thur-ma-lox is manufactured at the Dampney's Thur-Ma-Lox division at Doylestown, Penna.

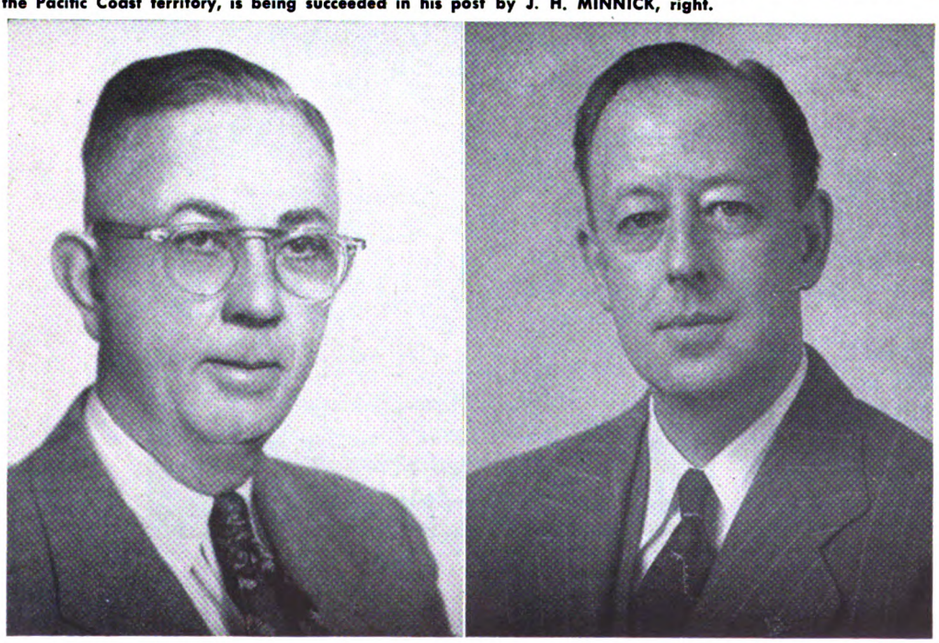
"Thur-ma-lox is a rust preventative, as is Apexior," says Walter B. Hill, marine department manager for the Moore Company.

"Thur-ma-lox No. 7 is a high-temperature coating suitable for temperatures up to 1600 degrees Fahrenheit. It is black in color and is recommended for atmospheric exposure where contamination is a problem from processing procedures accelerated by high temperature.

"Thur-ma-lox No. 10 is recommended for temperatures up to 1200 degrees Fahrenheit, is an aluminum finish coating, and best results are obtained when applied to equipment sheltered from the atmosphere."

The C. C. Moore Company is the Pacific Coast distributor for the Dampney company.

C. A. DAVIDSON, left, retiring as Marine Engineer of Shell Oil Company's lubricants sales department for the Pacific Coast territory, is being succeeded in his post by J. H. MINNICK, right.



McLennan Co. Named Nordberg Western Canada Distributors

K. A. McLennan Co., Ltd., Vancouver, has been appointed exclusive distributors in Western Canada for Nordberg Manufacturing Co. of Milwaukee. The company has its sales office and showrooms at 1927 Georgia Street.

Directors of the McLennan organization are R. C. Burdick, D. V. Greenwood and K. A. McLennan.

⚓ ⚓ ⚓

Alfred Iddles New President of Babcock & Wilcox

New president of The Babcock & Wilcox Company is Alfred Iddles, elected in April to succeed A. G. Pratt, who has been with the company 45 years and president 24 years. Mr. Iddles joined the company in 1937 and became a vice president in 1945. Mr. Pratt became chairman of the board.

W. H. Rowand was named chief engineer of the company, a new position created by the promotion of Mr. Iddles to the presidency.

C. W. Middleton, vice president and secretary, has withdrawn from full-time activity but will continue as a director and consultant. ⚓ ⚓ ⚓

G. E. Reduces Prices On Certain Apparatus

A second reduction in prices this year was announced recently by Charles E. Wilson, president of General Electric. This flat five per cent reduction, effective since April 16, applies to certain lines of Apparatus Department products on which the company does an annual business of close to $200,000,000.

The price cut will amount to a saving of nearly $10,000,000 annually to the company's customers and the earlier reductions would amount to a savings of $50,000,000 to the ultimate consumer in 1948. Items in the reduced group are fractional-horsepower motors, switchgear, conventional distribution transformers, lightning arresters, feeder regulators, cutouts and power capacitors. ⚓ ⚓ ⚓

Sperry Gyro Revises Marine Catalog

A revised marine catalog section describing the rudder angle indicator has just been issued by Sperry Gyroscope Company, Great Neck, New York. Available from Sperry on request, the publication number is 18-5A.

The section defines the function and specifications of the rudder angle indicator system and includes outline drawings of equipment components.

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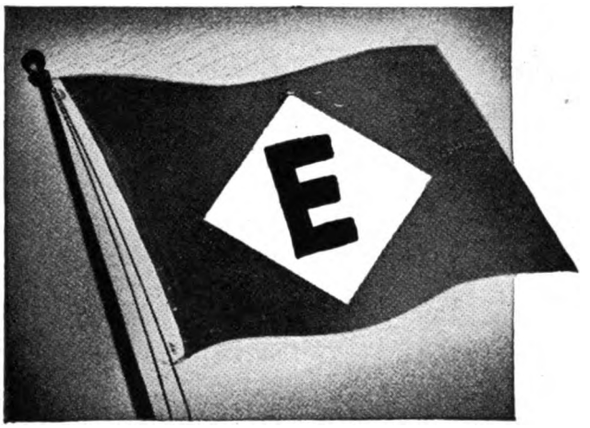

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Dahl-Beck Company Installs Two New Degreasing Units

New equipment installed recently by Dahl-Beck Electric Company, San Francisco, to serve the marine industry, in addition to vacuum dip tanks for treatment of electric motors, includes two new degreasing units large enough to handle motors and parts up to and including 300 KW generators.

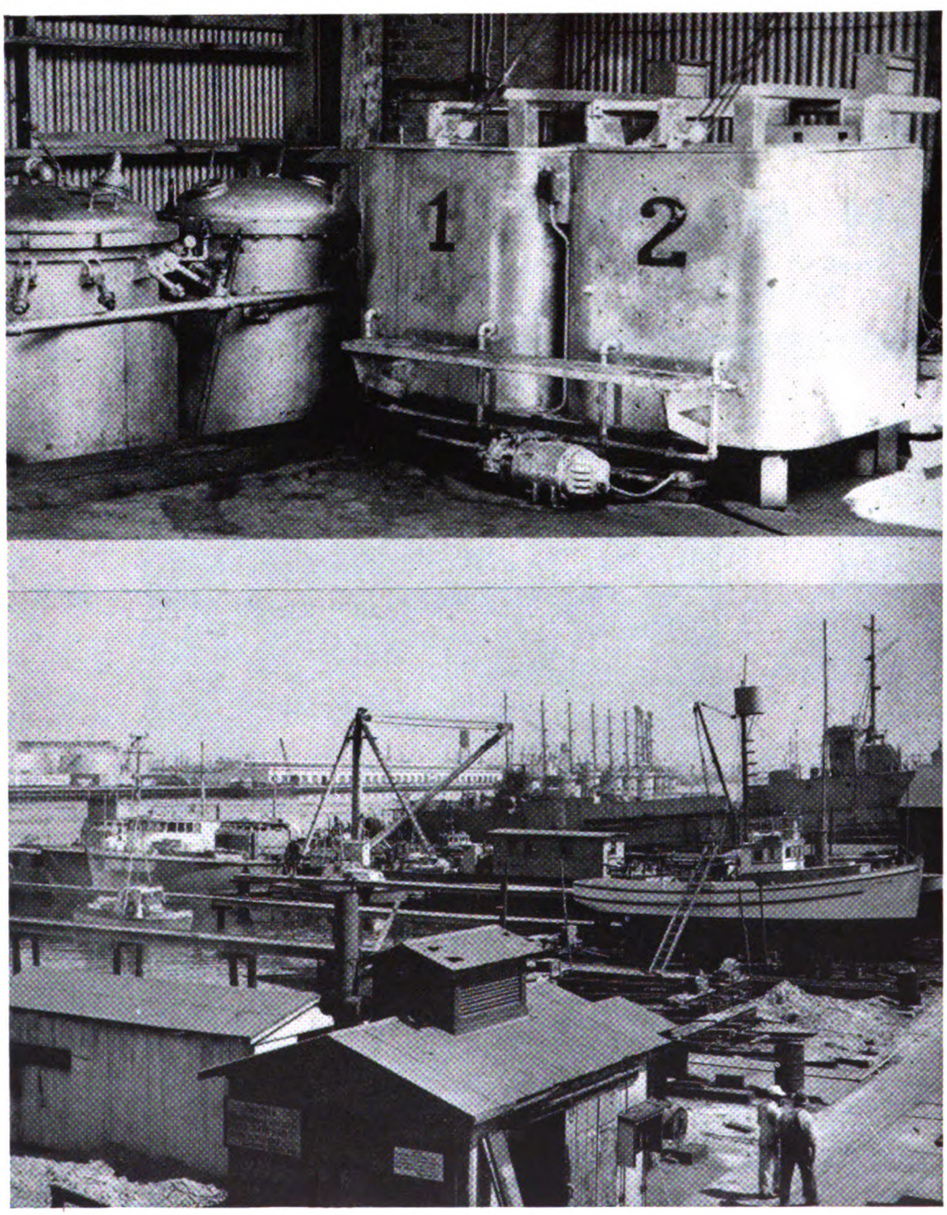
Each of these tanks, marked in the accompanying picture as No. 1 and No. 2, has a capacity of 1,000 gallons of cleaning fluid, which is agitated by pumps.

In the cleaning process, all motor parts, including fields and armatures, are first blown with air, then surface-washed to remove all excess dirt and grease, and then placed in tank No. 1 for cleaning. After this first cleaning, they are then placed in tank No. 2 for a second and final cleaning.

The windings and armatures are then placed in a large electric bake oven and baked at 280 degrees Fahrenheit. From this oven they go into the vacuum tank under 28 inches of vacuum for one hour and then are removed for the "Megger" leakage test. If satisfactory, windings are then dipped in accordance with U.S. Army Transport Service specifications Nos. 1032 and 1033.

In 90% of the cases, when windings have low readings, this process has greatly improved the readings and in some cases has brought readings from "zero" to "infinity".

DAHL-BECK ELECTRIC COMPANY better serves the marine industry with the recently-installed two new degreasing units for large motors. These are shown on the right and to the left are two vacuum impregnation tanks for treatment of electric motors.



PARTIAL VIEW of the yard of Forster Shipbuilding Co., Inc., at the foot of Ferry St., Terminal Island California. This yard recently was taken over by Thomas B. Forster, who is president of the corporation, and who for years was manager of the Bethlehem yard on Terminal Island.
The new Forster yard formerly was the Garbutt & Walsh yard. With expanded facilities, it is currently handling a conversion job of 35 LCI's for the Argentine, at the same time performing all types of hull repair and diesel engine jobs for American craft.

Marine Assn. of Commerce Elects New Officers

Guy McCudden, president, Bay View Sheet Metal Works, Wilmington, California, in April was elected president of the Marine Association of Commerce, a Los Angeles harbor group of businessmen who are seeking to increase the flow of water-borne commerce through Los Angeles-Long Beach harbors. McCudden succeeds S. L. Kuykendall, Marine Marketing Co., San Pedro, initial president of the year-old association, formerly known as the Marine Trade Association.

Kuykendall was named 2nd vice-president and Willis Merrill, Copra Oil & Meal Co., was designated 1st vice-president. Richard W. Park, manager of the Wilmington branch plant of Republic Supply Co., was voted treasurer; and Harry E. Wade, Marine Specialty Co., Long Beach, was re-elected corporate secretary. Retained as executive and assistant executive secretary, respectively, were Robert Hays and Mary Kyle. A board of directors, comprising 24 members, was named a week earlier.

⚓ ⚓ ⚓

International Nickel Offers Revised Buyers' Guide

The International Nickel Company, Inc., 67 Wall Street, New York, is offering a new booklet presenting the facilities, specialties and locations of authorized producers of Ni-Hard, a nickel-chromium white alloy cast iron. According to the company this product is the hardest commercial product of the iron foundry, proving its economy over chilled white iron and austenitic steels by factors of 2 to 3 times in severe abrasion uses in the mining, power and ceramic industries. The abrasion problem questionnaire, included in the revised buyers' guide for Ni-Hard castings, enables the reader to submit sufficient information on a problem for a recommendation of a suitable material to be used in his service.

⚓ ⚓ ⚓

"Eutecrods" Distributed by Refrigeration Components

Fred Esser, owner of Refrigeration Components, 15 Steuart Street, San Francisco, announces his firm now is exclusive refrigeration distributor in the San Francisco Bay Area for Eutectic welding rods, which have a new flux coating containing metals and chemicals which improve the bonding at base metal heats. These "Eutecrods" weld brass, bronze, copper, aluminum, steel, cast iron and malleable iron at degrees ranging from 575 to 1600 degrees Fahrenheit.

⚓ ⚓ ⚓

Weeks-Howe-Emerson New Stocks of Lifetime Brand

Weeks-Howe-Emerson Company, San Francisco ship chandlers, announce they have stocks of Lifetime brand pure drinking water, which is the emergency water ration accepted by the United States Coast Guard as standard equipment aboard ocean-going vessels.

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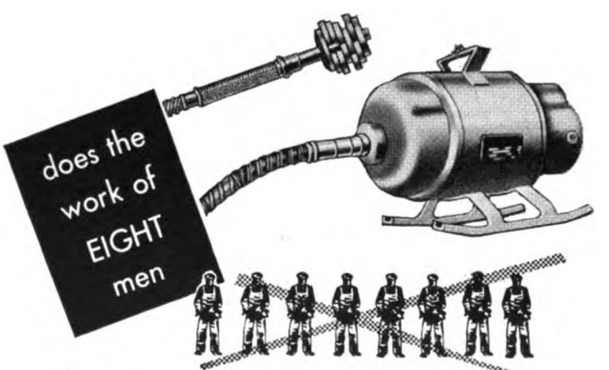

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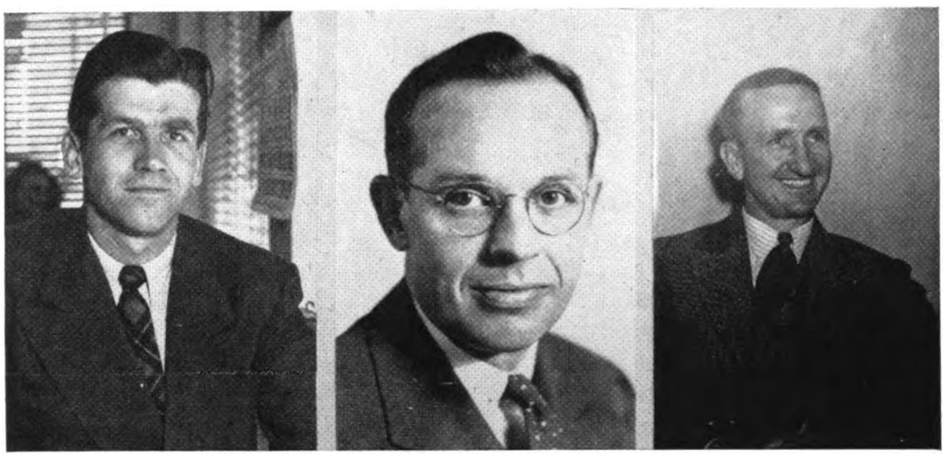


WILLIAM FELL CHARLES S. SILSBEE J. R. SHERIDAN

Fell Becomes Marine Sales Rep for Worthington Pump

William Fell has succeeded Harry E. Sargent as the marine sales representative of Worthington Pump & Engineering Company at San Francisco. Mr. Fell has been with Worthington for the past two years. Mr. Sargent goes on to a higher post covering the petroleum industries for Worthington.

⚓ ⚓ ⚓

Silsbee Transferred to Main Office of Dearborn Chemical

Formerly manager of the marine division, New York office of the Dearborn Chemical Company, Charles S. Silsbee has been appointed assistant to E. P. Fager, vice president of the Industrial Feed Water Sales and Engineering Department. He will be headquartered at the company's main office, 310 S. Michigan Avenue, Chicago.

⚓ ⚓ ⚓

United Engineering, Portland, Services Hagan Controls

Announcement has been made of the appointment of United Engineering Company, 6940 North Olin, Portland, Oregon, as authorized sales and service engineers for Hagan Combustion Controls, Hall System of control of boiler scale, and Bull and Roberts Marine Boiler Water treatment.

United Engineering Company is owned and managed by J. R. Sheridan. A graduate in chemical engineering at Cooper Union Institute of Technology, New York City, Sheridan was assistant power engineer with the Western Engineering department of American Smelting and Refining Company, stationed at Salt Lake City, prior to organizing his own company in Portland.

⚓ ⚓ ⚓

Perry Roach Joins Western Ship Service

Perry Roach, well-known former port engineer, is now superintendent of the Western Ship Service Company, 178 Fremont Street, San Francisco, it is announced by J. M. Simpson, general manager. Mr. Roach, first secretary of The Society of Port Engineers, San Francisco, was with the Pacific-Atlantic Steamship Company and Williams, Dimond & Company at San Francisco and, during the war, was port engineer for the War Shipping Administration at Halifax, Nova Scotia and St. Johns, Newfoundland.

⚓ ⚓ ⚓

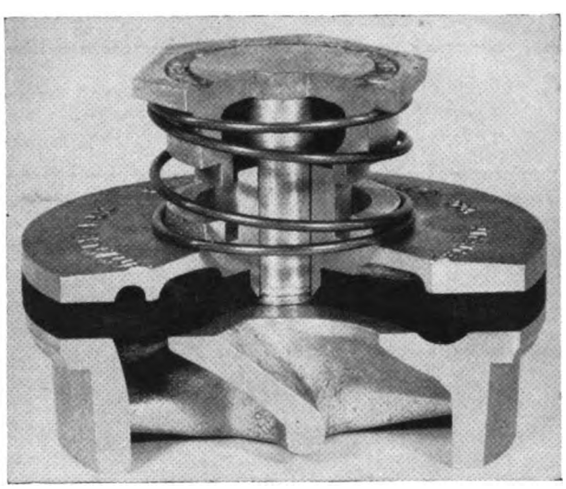
Jos. Gisler Co. Distributor For Continental Asbestos

Joseph F. Gisler Company, 444 Market Street, San Francisco, is announced as distributor for Continental Asbestos and Refining Corporation, New York, manufacturers of protective coatings. Continental's line includes Hydroleum No. 1, a steam and hot water tank coating; Hydroleum No. 2, a cold and drinking water tank coating; Stonoleum-Standard, a marine type deck coating for wood or steel, and Liquinoleum No. 2, a steel protective coating.

⚓ ⚓ ⚓

California Ship Repair Corporation, a new Oakland ship repair and conversion yard, announces it has received repair contracts from the United States Maritime Commission and the Army Transport Corps.

SIMS INCLINED PORT ROTATING PUMP VALVES



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S/S Lefcadio Hearn
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S/S Jean Baptiste Le Moyne
S/S Eliza Jane Nicholson
S/S Nathaniel B. Palmer
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S/S Horace See
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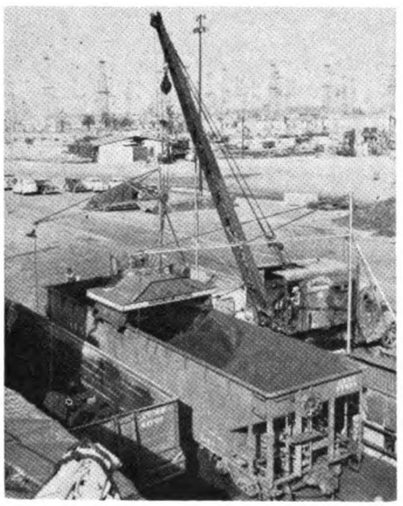

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VAL G. SAVAGE, new Supervising Director of Sales of the Marine Division of Gamlen Chemical Company, San Francisco and Pittsburgh.

Val Savage Promoted by Gamlen Chemical Company

Val G. Savage, New York, is now supervising director of sales of the marine division of the Gamlen Chemical Company, San Francisco and Pittsburgh, for the Atlantic and Gulf coasts, it is announced by Harry Gamlen, president.

Mr. Savage is very well known in marine circles on all seaboards. He was operating manager of the East Coast Shipyards and the New Jersey Shipyards, later marine superintendent of Heat Transfer Products, New York, and, during the war, head of the technical division, coordinator of Ship Repairs, for the U.S. Maritime Commission and the U.S. Navy on the west coast.

Mr. Savage joined the Gamlen staff about a year ago as marine supervisor at New York.

Submarine Signal Moves to Portland Waterfront Area

With E. J. Schneider in charge, the Portland office and parts division of Submarine Signal Company, has been moved from an uptown location to strategically situated quarters on the Portland waterfront at 2501 N. W. Front Avenue. Also announced is the opening of Submarine Signal Company headquarters at Astoria, Oregon, with A. J. Dunbar, Jr. in charge. Both Submarine Signal and Raytheon Pathfinder sales and service is being supplied through the Portland and Astoria offices. A Seattle office offers similar service in the area north of Grays Harbor.

National Malleable's 1948 Orders Show Increase over '47

According to Wilson H. Moriarty, vice president of National Malleable and Steel Castings Company, the company has a blacklog of orders considerably larger than a year ago and is booked to capacity on some items until the fourth quarter.

To a group of sales and operating executives from the company's plants in Chicago, Indianapolis, Sharon and Cleveland Mr. Moriarty said that sales in the first quarter of 1948 are estimated at about $12,000,000 comparing with $9,600,000 in the first quarter of 1947.

Sees Ample Lubricants For U. S. Consumption

Plenty of lubricants during the next four years were promised to American industries and motorists recently by A. J. McIntosh, economist for Socony-Vacuum Oil Co., Inc. Manufacturing facilities for lubricants will be considerably in excess of demand by 1951, provided we have a continuation of peace.

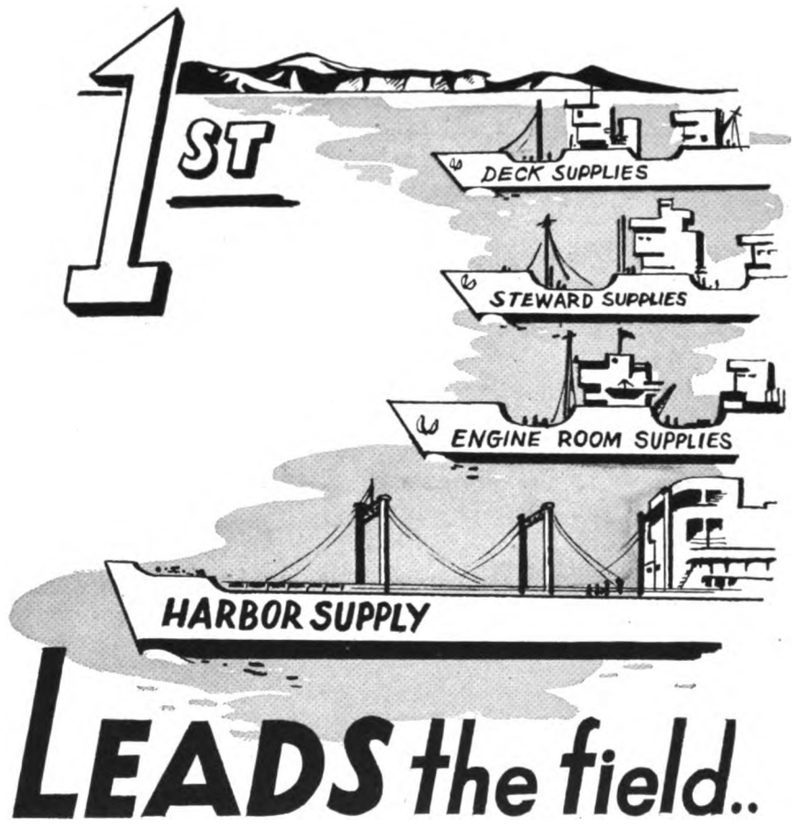
He said, "We look for a modest decline over the next few years, culminating in a sharper decline to the 1941 level by 1951 and for every 10 point difference in the forecast of industrial production, we add or deduct 2,000 barrels per day for the consumption of industrial lubricants."

A. J. Stream Transfers to Asbestos Supply of Oregon

George Baccrich, manager of Asbestos Supply Company of Oregon, has announced the appointment of A. J. Stream as assistant manager. With this move Stream transfers to Portland from San Francisco where he was vice president of Plant Rubber and Asbestos Company in charge of Pacific Coast operations.

A. J. STREAM, newly-appointed Assistant manager of Asbestos Supply Company of Oregon.

Stream was 1947 president of the Associated Insulation Contractors of the Pacific Coast and a member of the 1946 board of directors.



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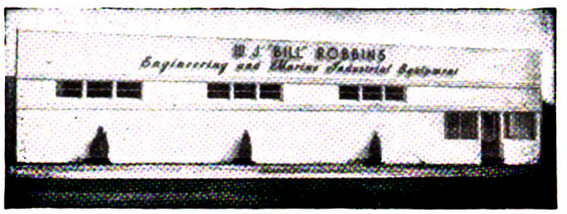

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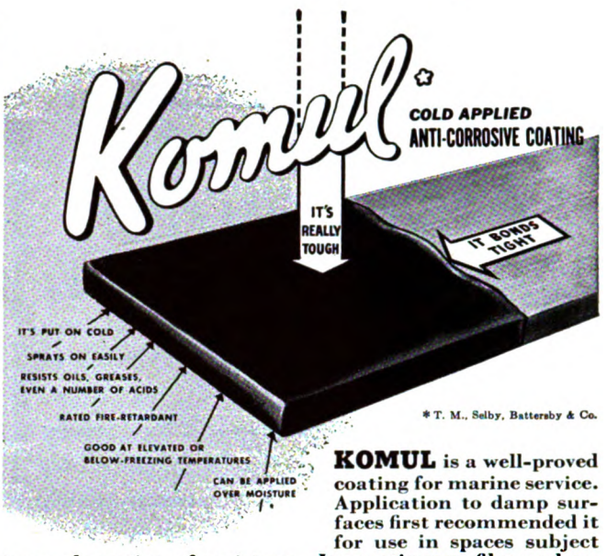

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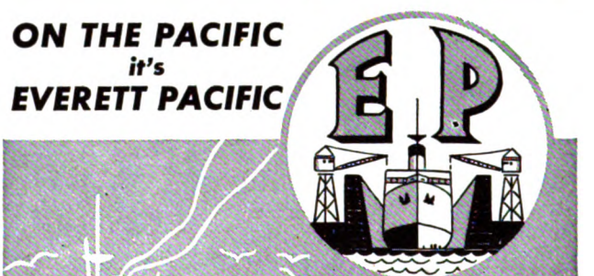

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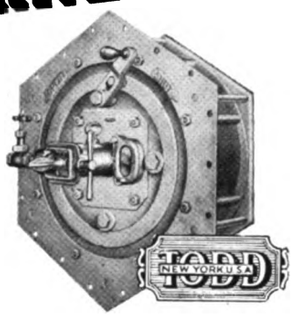

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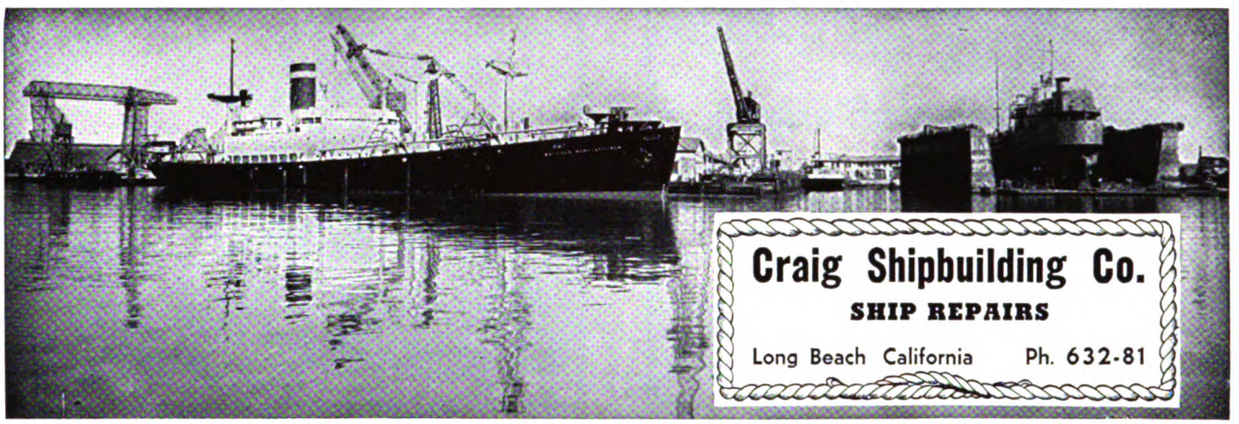

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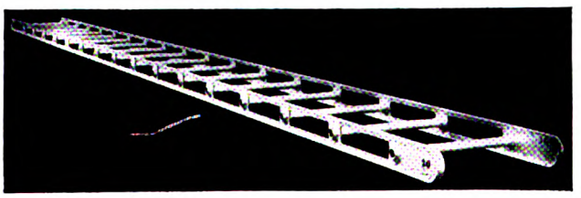

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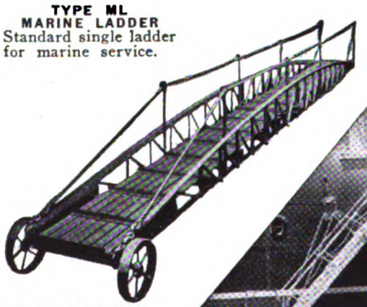

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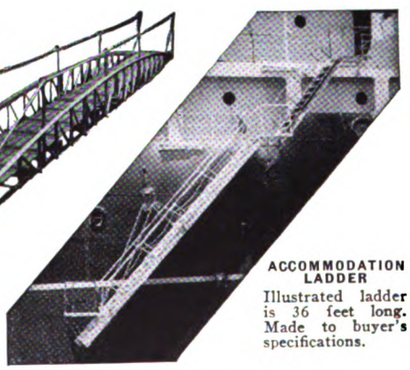

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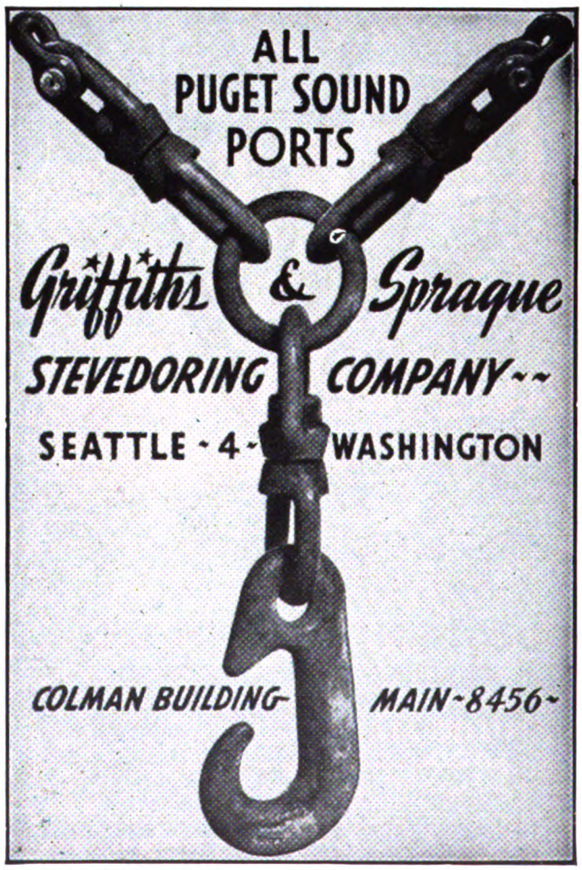

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ADVERTISERS INDEX

Albina Engine & Machine Works 42
Allen Pacific Co., Inc., Robert G. 79
Aluminum Company of America 13
Aluminum Ladder Co. 76
American Brass Co. 79
American Export Lines 67
American Mail Line 76
American President Lines 78
Arnessen Electric Co. 69
Asbestos Supply Company of Oregon 44
Atlas Paint & Varnish Co. 64
Babcock & Wilcox Co. 25
Baier & Associates, L. S. 80
Baker Dock Co. 79
Barry Co., James H. 80
Bird-Archer Company of California 78
Bludworth Marine 53
Bratsberg, Capt. A. J. H. 80
California Ship Repair Corp. 79
Carrier Corporation 24
Catalina Island Steamship Line 78
Cavanaugh Machine Works 67
Central Maritime Contracting Co. 74
Columbia Machine Works 79
Commercial Ship Repair 15
Consolidated Services, Inc. 44
Cordes Bros. 79
Costello Supply Co., J. M. 77
Craig Shipbuilding Co. 76
Crane Packing Co. 56
The Curtis Bay Towing Co. 6
De Boom Paint Co. 57
De Laval Steam Turbine Co. ..... 27 & 75
Dravis Engineering & Machine Works 77
Drew & Company, Inc., E. F. 1
Duke's Packing Co. 65
Ets-Hokin & Galvan 67
Everett Pacific Shipbuilding & Dry Dock Co. 73
Forster Shipbuilding Co., Inc. 71
Formica Insulation Co. 34
Fuller & Co., W. P. 16
General Electric Co. ..... 10 & 11
General Engineering & Dry Dock Co. 67
Gladding, McBean & Co. 78
Gow, Inc., Alexander 78
Green Fire Brick Co., A. P. 61
Griffiths & Sprague Stevedoring Co. 76
Guralnick, Morris 80
Hagan Corporation 8
Hanson, H. C. 80
Harbor Supply Co. 72
Harris, Manly S. 80
Hart & Burns, Inc. 65
Hendry Co., C. J. 2
Heuck Company, Ed 56
Hickman Engineering Company 75
Hiller, Paul W. 78
International Nickel Company 31
Isherwood & Co., Ltd., Sir Joseph W. 79
Jeans, Captain Harvey A. 80
Kearfott Company, Inc. 21
Liquidometer Corp., The 73
Long Beach Marine Repair Co. 74
Long Beach, Port of 71
Lorentzen Company 23
Luce & Company 64
Marine Electric Co. (Portland) 71
Marine Electric Co. (San Francisco) 79
Marine & Industrial Supplies & Service, Inc. 55
Marine & Industrial Supply, Inc. 78
Marine Service, Inc. 78
Maritime Engineering 79
Markey Machinery Co. 62
Moore & Co., Engineers, C. C. 25
Moore-McCormack Lines 62
Moran Towing & Transportation Co. ..... 28 & 29
Morrison & Bevilockway 77
National Malleable & Steel Castings Co. 20
Nickum & Sons, W. C. 80
Nordberg Manufacturing Co. ..... Front Cover & 3
Northwest Instrument Co., Inc. 80
Nystrom, E. W. 80
O'Donnell Copper Works, E. M. 78
Oxi Corporation 4
Pacific Marine Refrigeration Co. 77
Pacific Marine Supply Co. 75
Parks, Frank 44
Perry, L. C. 80
Pilot Marine Corporation 75
Puget Sound Freight Lines 77
Raytheon Manufacturing Co. 33
Refractory Coatings Co. 77
Republic Electric Co. 77
Robbins, W. J. "Bill" 73
Roebling's Sons Co., John A. 9
Ross Heater & Manufacturing Co., Inc. 55
Rothschild International Stevedoring Co. 78
S & S Paint Manufacturing Co. 44
Seaboard Machinery Corp. 5
Seattle Marine Surveyors 80
Seattle, Port of 69
Selby, Battersby & Co. 73
Shaw Bros. & Associates 80
Shell Oil Co., Inc. 17
Sherwin-Williams Co. ..... Inside Back Cover
Sims Pump Valve Co., Inc. 70
Socony-Vacuum Oil Co., Inc. ..... Inside Front Cover
Standard Oil Company of California 7
Submarine Signal Co. ..... 18 & 19
Sumco Products, Inc. 12
Sweetin Co., J. L. 80
Swett & Co., George E. 69
The Texas Company ..... Outside Back Cover
Thorpe & Son, Inc., J. T. 79
Todd Shipyards Corporation (Combustion Equipment Division) 74
Tubbs Cordage Co. 63
Union Diesel Engine Co., The 44
United Fruit Co. 14
Warren Steam Pump Co., Inc. 22
Weeks-Howe-Emerson Co. 78
Western Asbestos Co. 74
Western Machinery Corp. 80
Wilmington Engineering Service Co. 78
Wilson, Inc., Thomas C. 53

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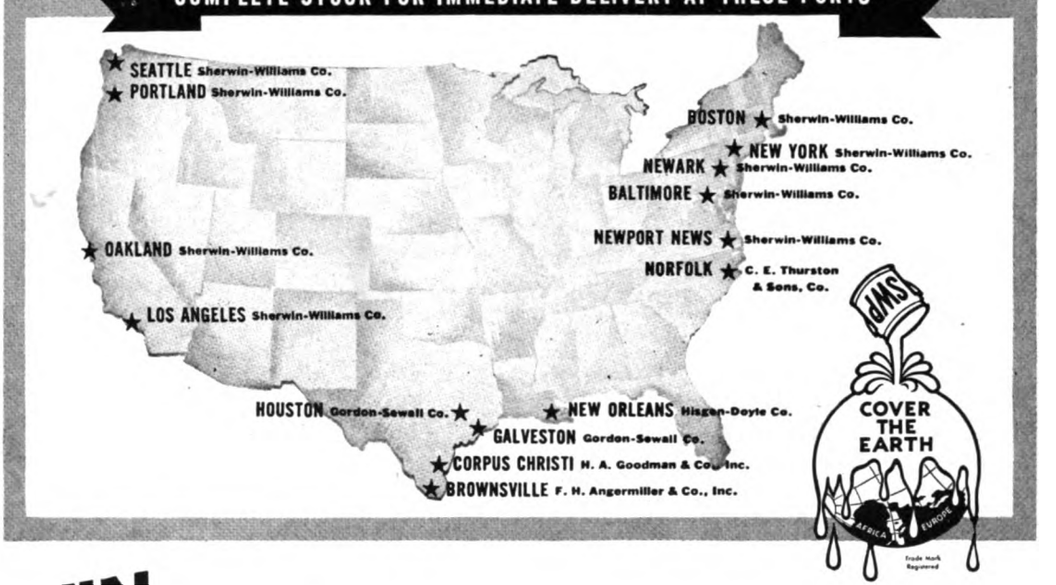

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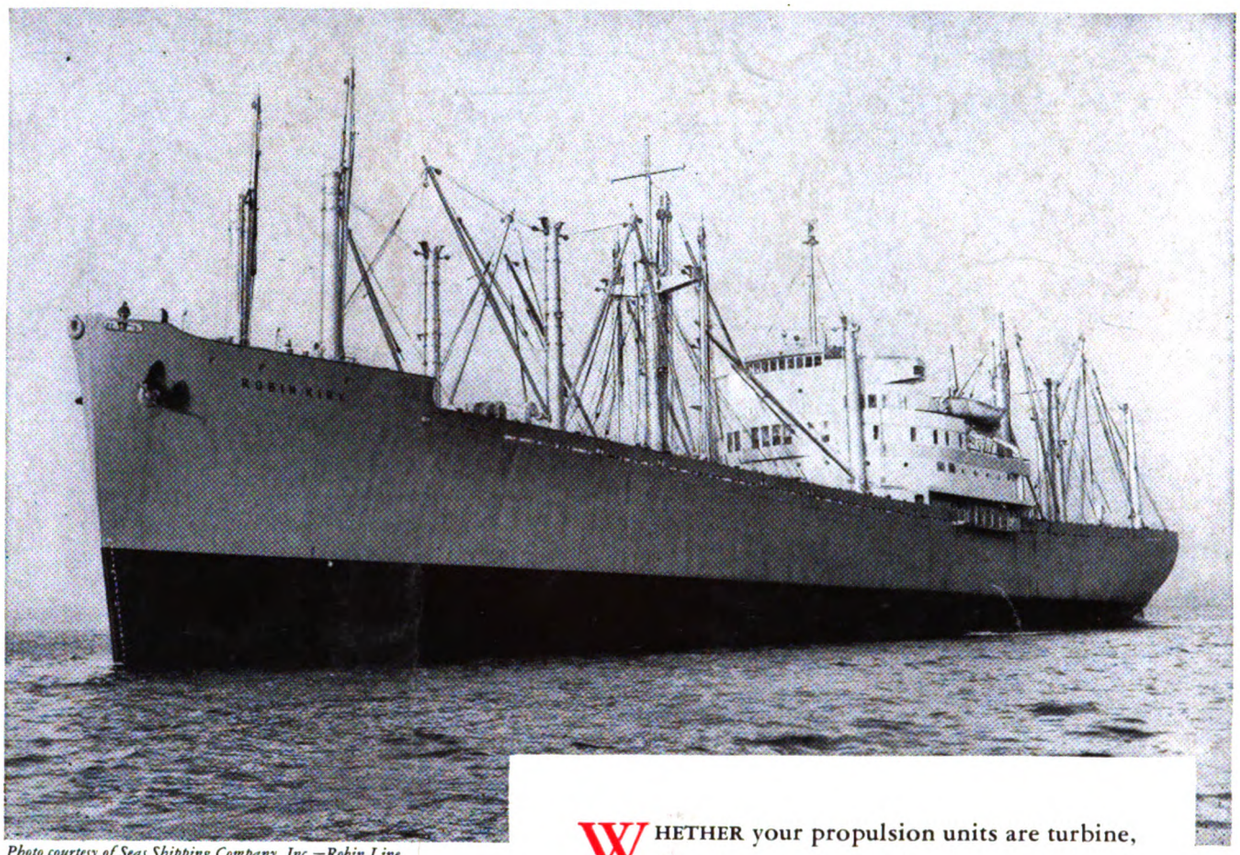

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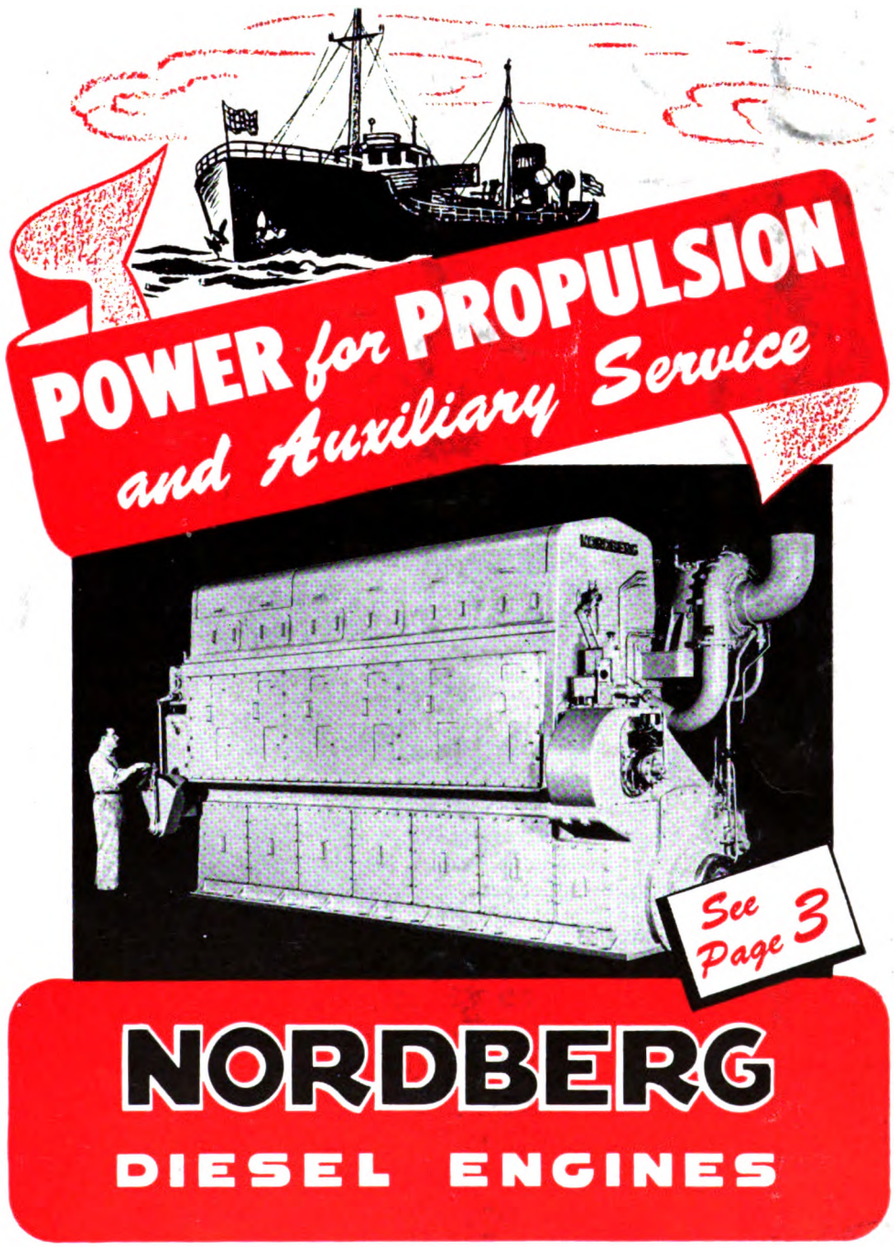

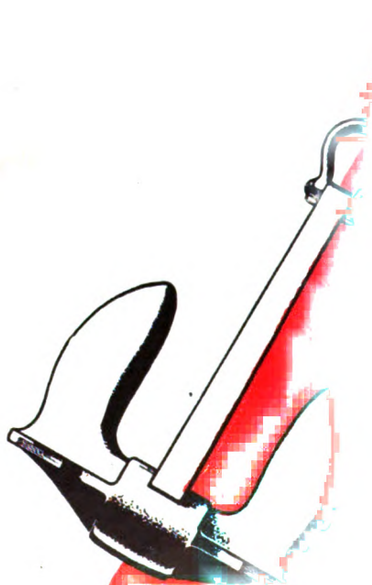

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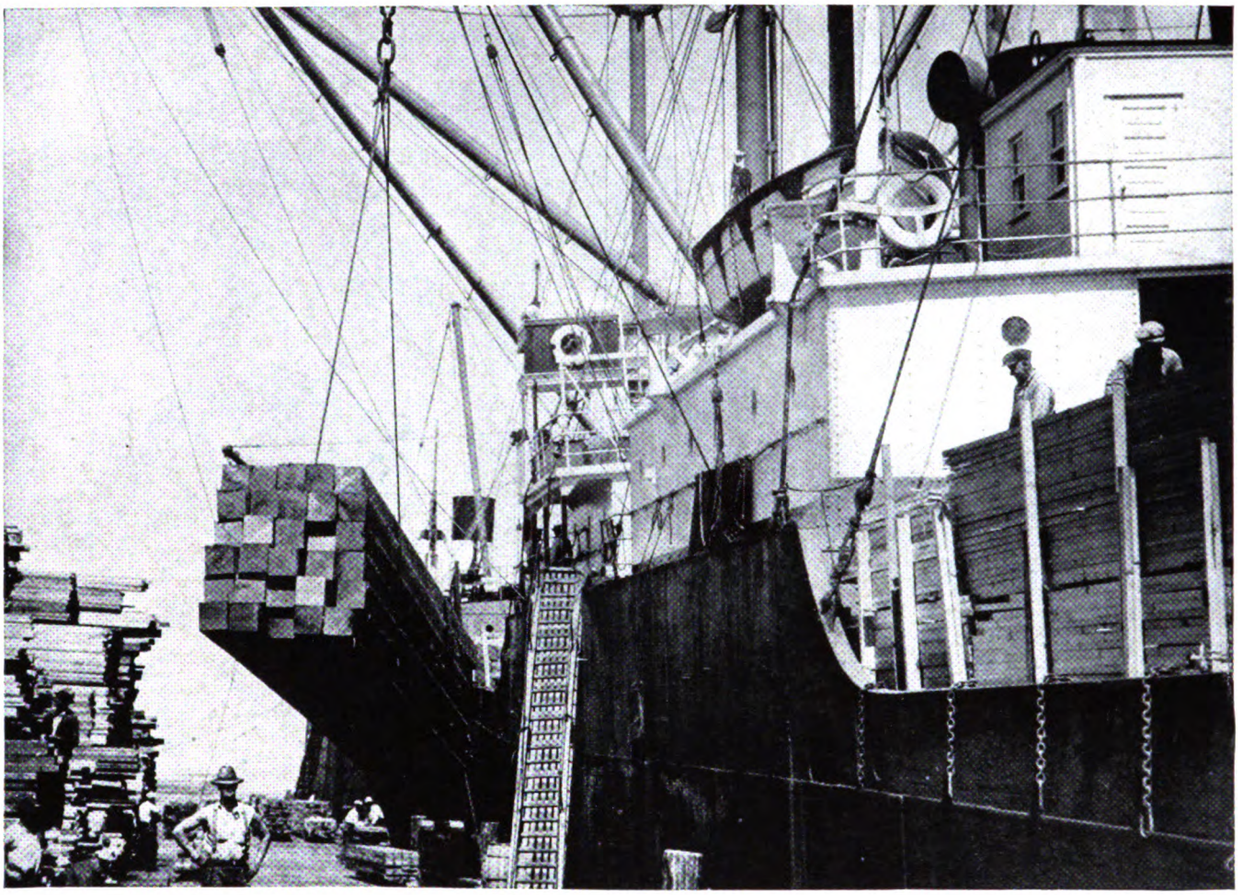

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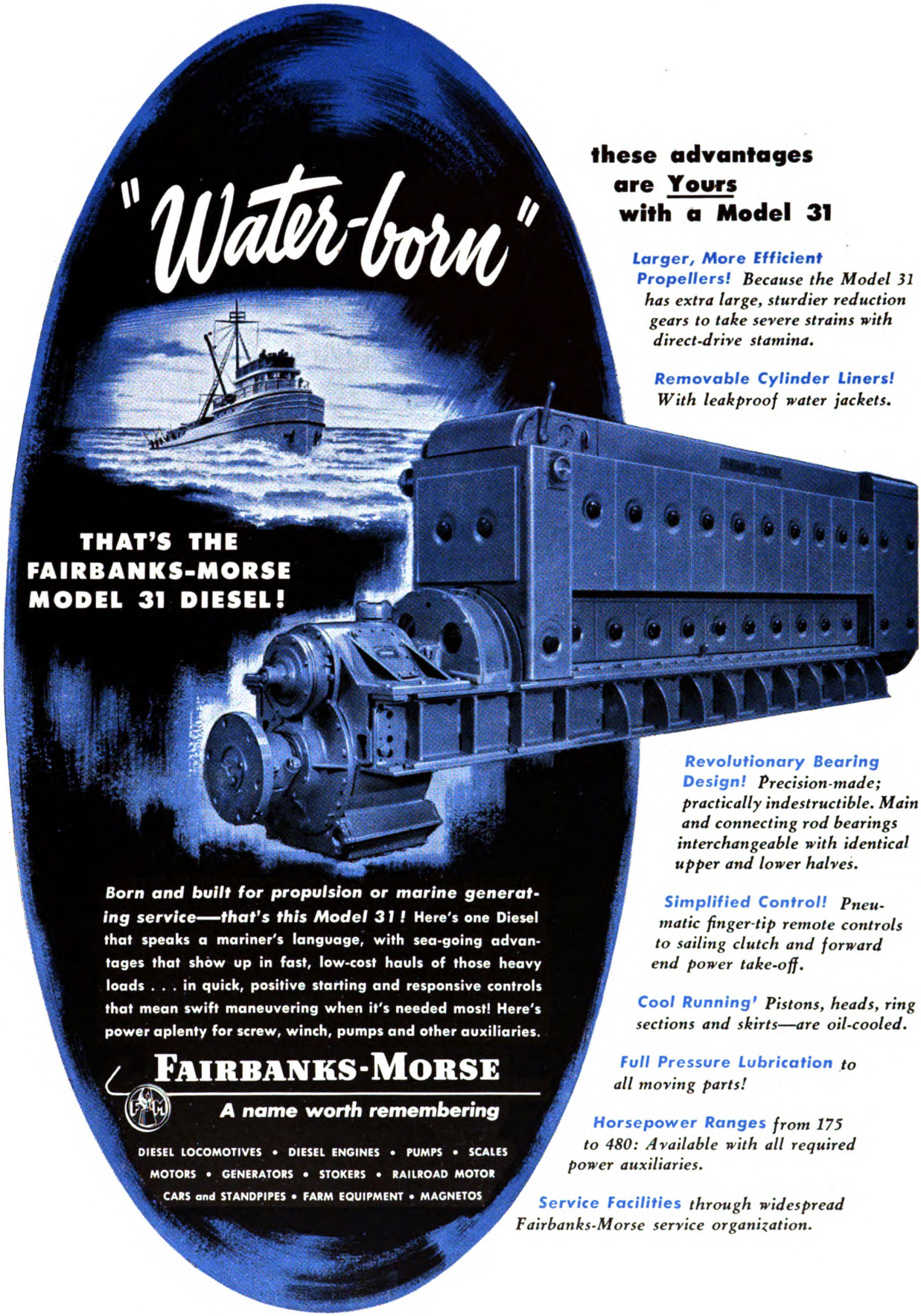

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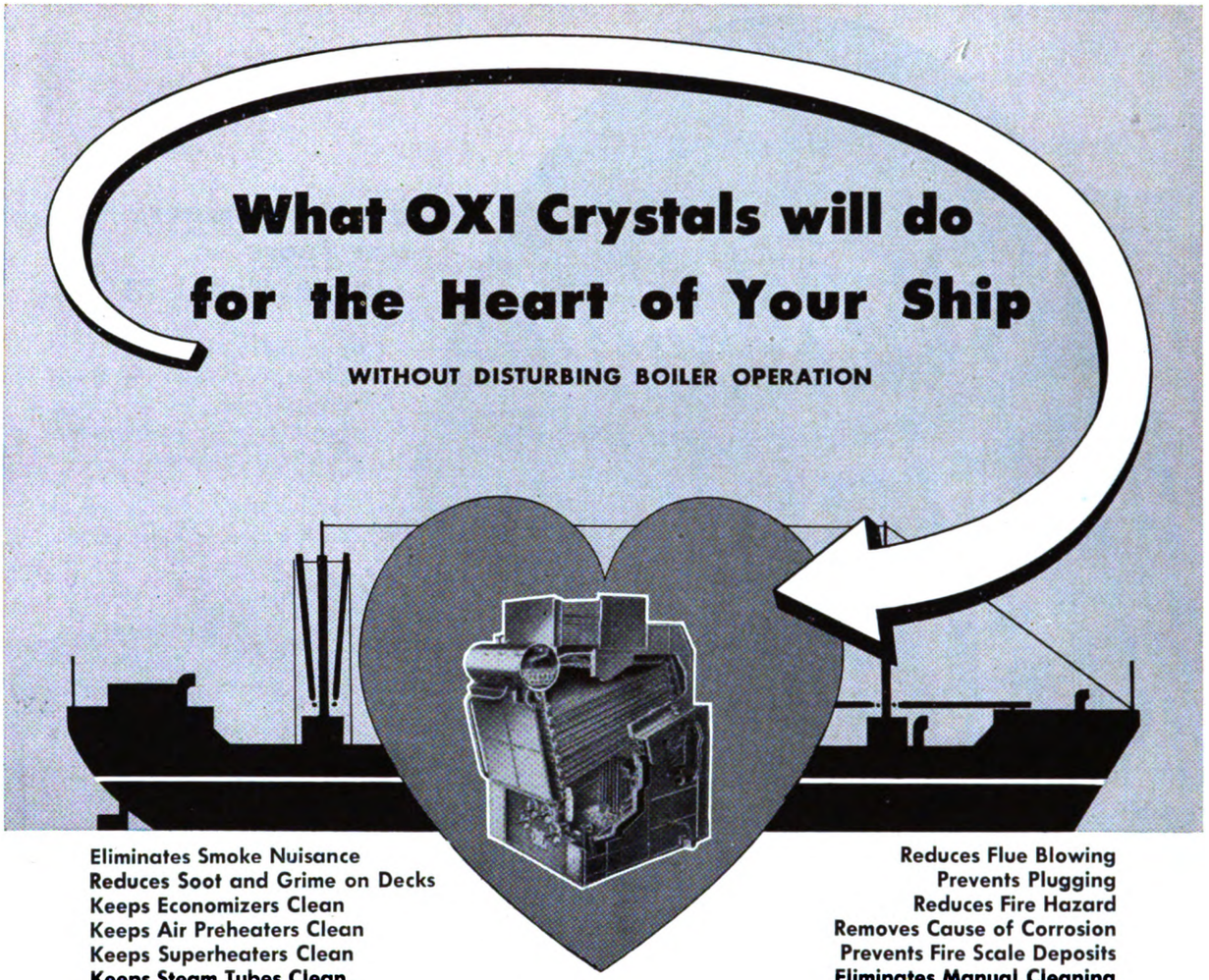

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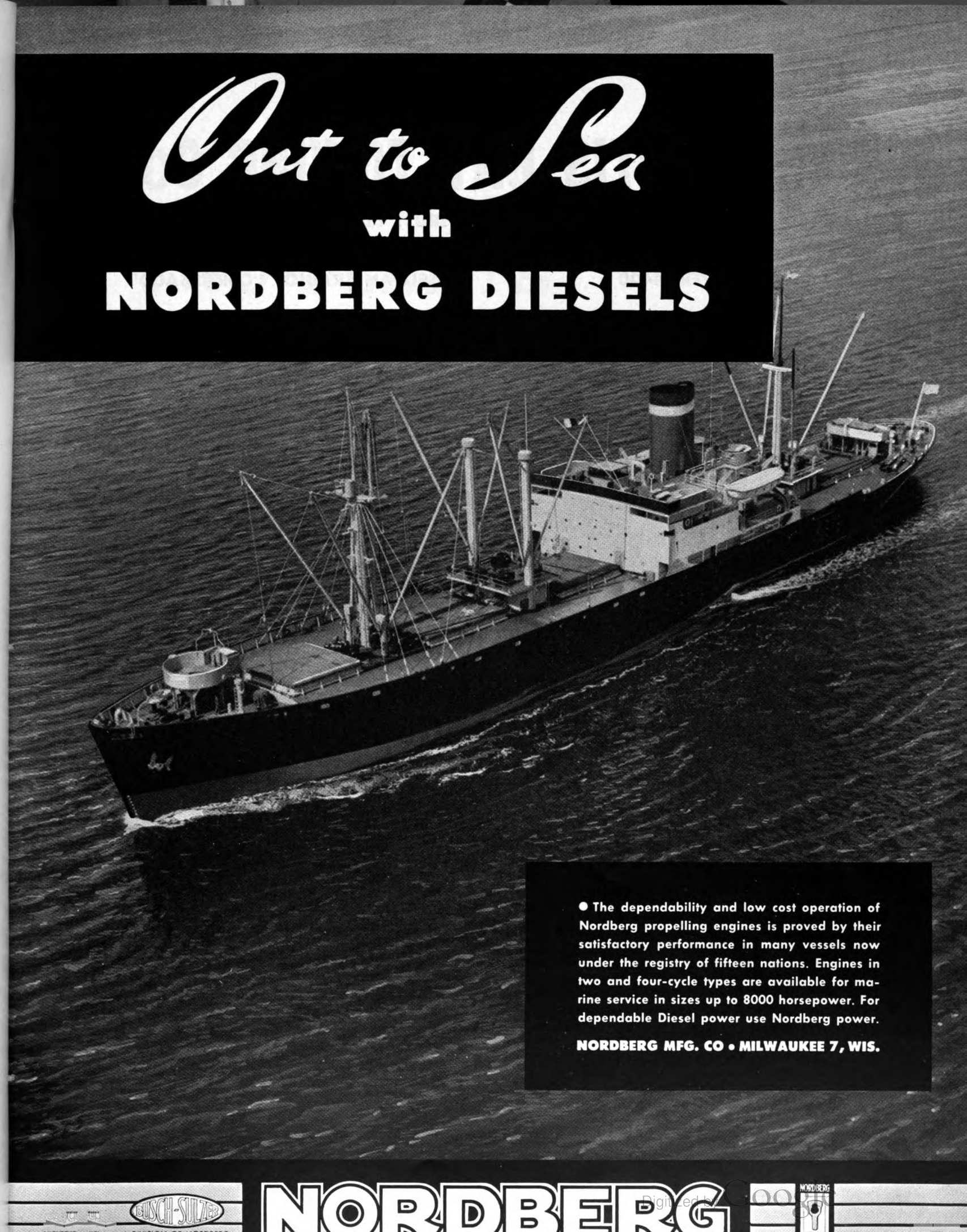

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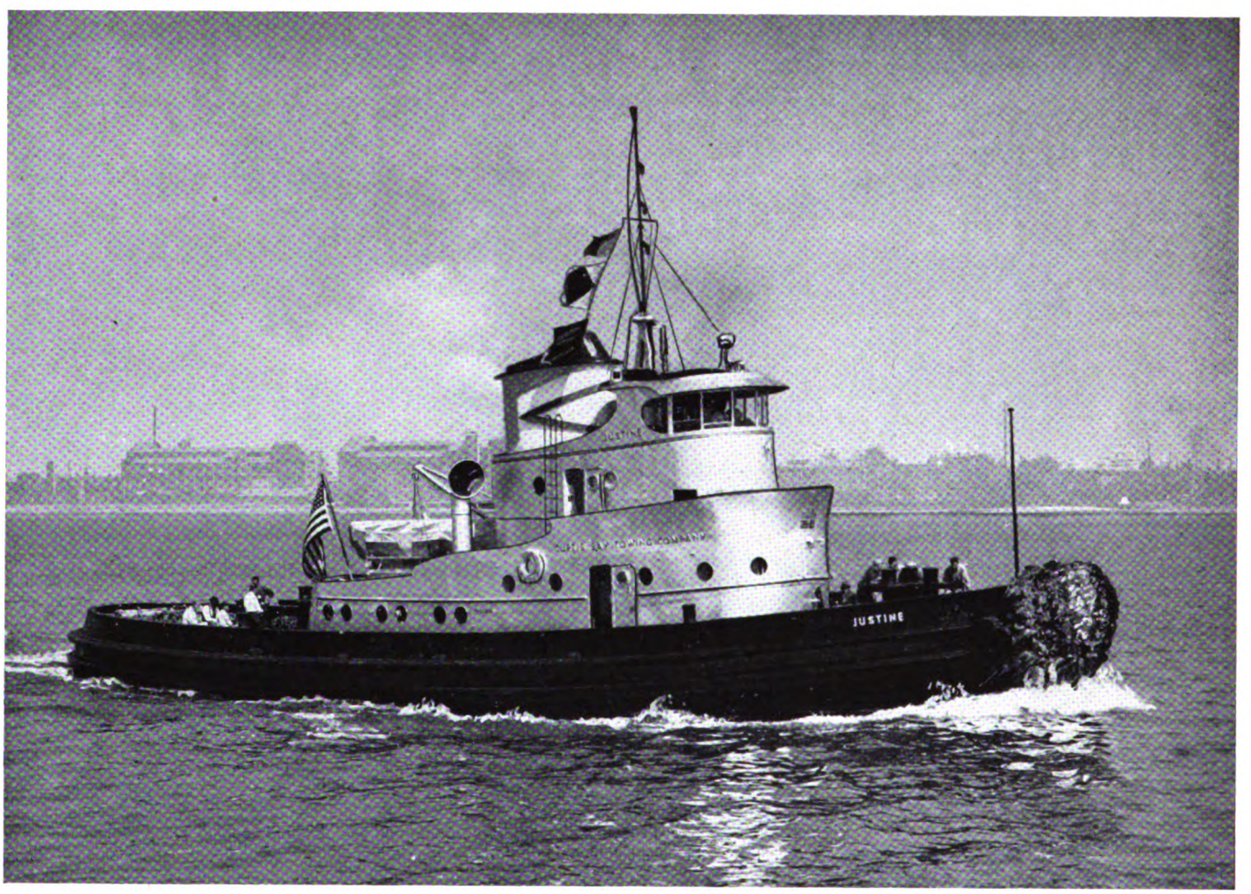

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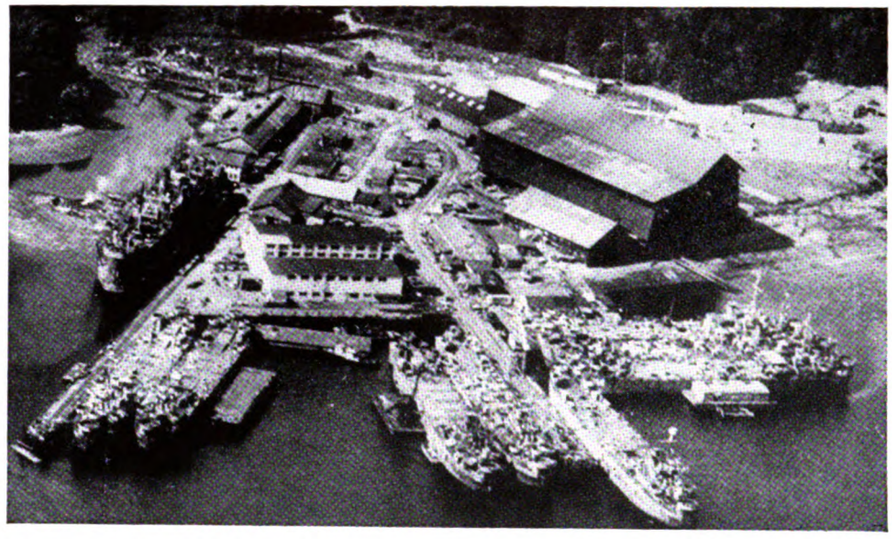

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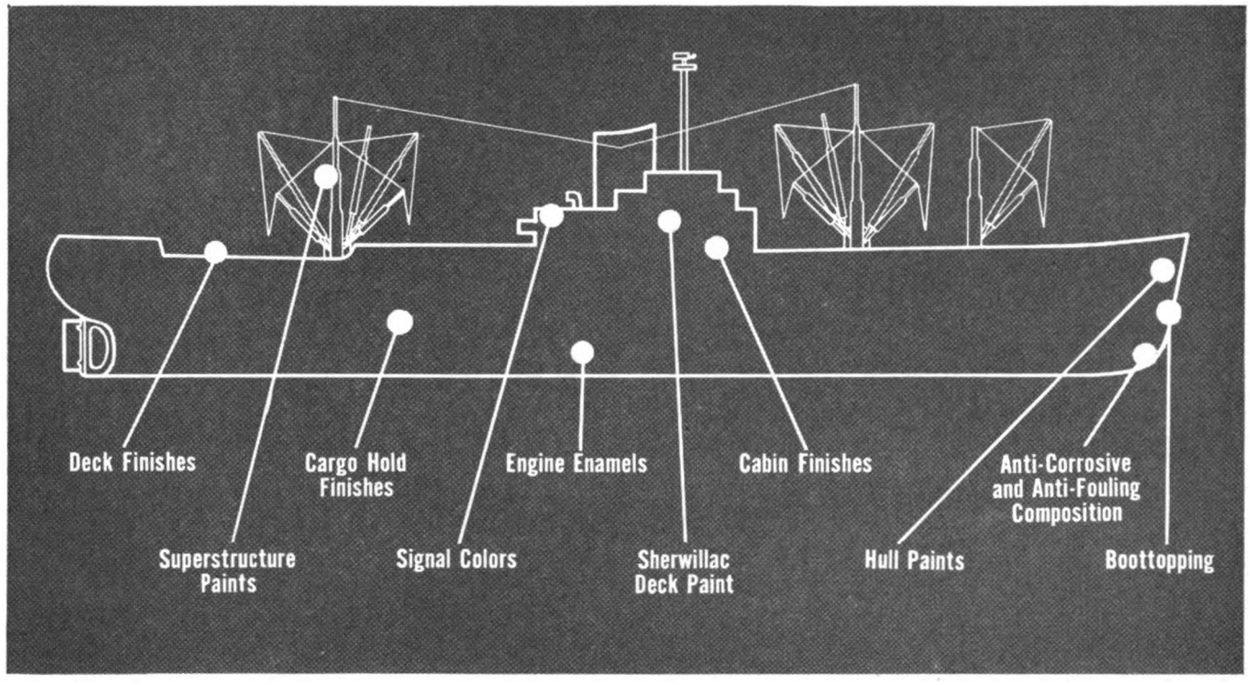

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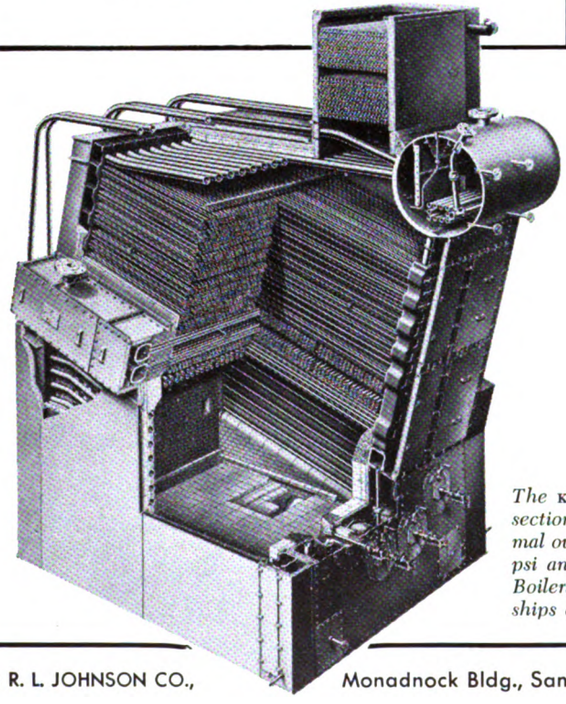

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Save on costly damage in storms because Seaboard Mege Quick-opening Hatchcovers are rain tight in 2 to 3 minutes.

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5 years without shore leave

Even for firebrick, five years on the high seas is a long time. Yet that's the history of B&W JUNIOR FIREBRICK in a C-2 during the war.

In 1941 these brick were installed in the rear, floor, front, and lower sides of the boiler furnace. Only the side walls were water-cooled.

All through the strenuous war years, this ship saw active, continuous service . . . and not until 1946 *was refractory replacement necessary.*

This record is typical of many B&W case histories pointing the way to new economies in boiler room operation through low refractory maintenance.

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•

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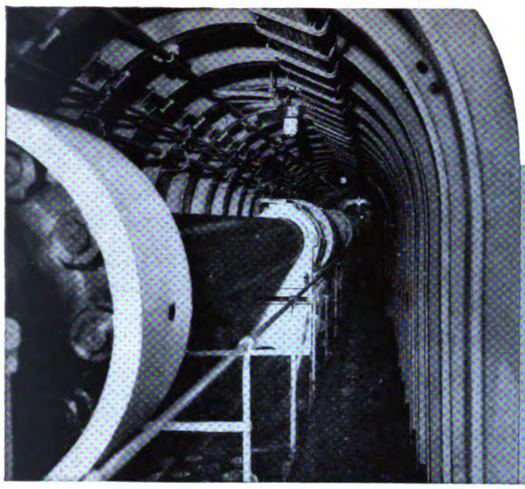

SHAFT ALLEY Chatter

Capt. Lemler Heads Todd's San Francisco Operations

Philip Lemler has been elected vice president and general manager of the San Francisco Bay Area operations of Todd Shipyards Corporation. Todd recently leased the shipyard facilities and dry docks at Alameda and Pier 36 and shop facilities on Beale Street of the United Engineering Co., San Francisco.

In continuing his announcement of personnel appointments John D. Reilly, president of the company, stated the board of directors of Todd Pacific Shipyards Corporation has appointed John D. Reilly, Jr., assistant general manager and Joseph J. Redington, management consultant. Robert E. Christy was named a special representative of Todd's activities at Los Angeles, San Francisco and Seattle.

Following graduation from the United States Naval Academy in 1919 and a course at the Post Graduate School of the Academy, Philip Lemler graduated from the Massachusetts Institute of Technology in 1923. He served in the Navy Yard, New York, having charge of the new construction of the cruisers, USS BROOKLYN and USS HONOLULU, was shop superintendent at the Navy Yard, Philadelphia, and was instructor at the Naval Academy in the Department of Electrical Engineering.

During World War II Captain Lemler had duty in the Bureau of Ships in the Navy Department at Washington.

He organized the Facilities Section of the Bureau and was charged with the direct supervision of the wartime expansion of all Navy Yard facilities. In addition, he had full charge of new construction facilities in all yards building ships for the Navy. As far as ship repair was concerned, he was responsible for providing the necessary facilities for repairing all Naval and commercial ships in the Continental United States and at the Pacific Island bases. He developed the requirements for floating dry docks, from the small 1,000 ton dry docks up to the gigantic sectional 80,000 ton dry docks.

For his work in the Navy Department, Captain Lemler was awarded the Legion of Merit by the President of the United States through the Secretary of the Navy.

In July, 1946, Captain Lemler left the Bureau of Ships for the San Francisco Naval Shipyard and assumed its direction in October of that year. His voluntary retirement from the Navy takes effect on the 1st of July, 1948.

John D. Reilly, Jr. graduated from the Sheffield Scientific School of Yale University in June, 1940, Subsequently, he was employed in various engineering and executive capacities at the Seattle-Tacoma Shipbuilding Corporation and the Charleston Shipbuilding and Dry Dock Company. During World War II he served in the U. S. Naval Reserve as Ensign and Lieutenant (j. g.) and was assigned to the Philadelphia Navy Yard as an inspector of shipping. In 1946 Mr. Reilly joined the Hoboken Division of Todd Shipyards Corporation and in 1947 was made assistant general manager of that plant.

Joseph J. Redington has been associated with Todd Shipyards since 1941 in the New York and Los Angeles areas in executive capacities.

Robert E. Christy is well known in the West Coast maritime industry and was associated with the Matson interests as the vice chairman of their United Engineering Company, San Francisco until recently, when Todd took over their shipyard properties.

Mr. Reilly pointed out that the acquisition of the Alameda and San Francisco plants fills a long-felt desire for his organization to be represented in the port of San Francisco and completes the chain of Todd's West Coast yards. Todd has been operating at Seattle since 1916 and at Los Angeles since 1943. For a short time during the war Todd was building ships at Richmond, California, and for the past four years they have maintained a San Francisco office.

CAPTAIN PHILIP LEMLER, Vice President and General Manager of the San Francisco Bay Area operations of Todd Shipyards Corporation.

WEST MEETS THE SOUTH—The famous Southern hospitality of Mobile Alabama is evidenced here among the shipping fraternity when E. A. ROBERTS, Chairman of the Corporation, Waterman Steamship Corp. (left) shows the Company's home port to ARTHUR CAHILL, President, Sudden & Christenson, Inc., San Francisco (right) aboard one of Waterman's tugs. Also getting a river-side view of Mobile is LOUIS CATES, Chairman of the Board, Phelps Dodge Corp. (second from left) and RICHARD MURRAY, Vice President, Waterman Steamship Corp. (second from right).

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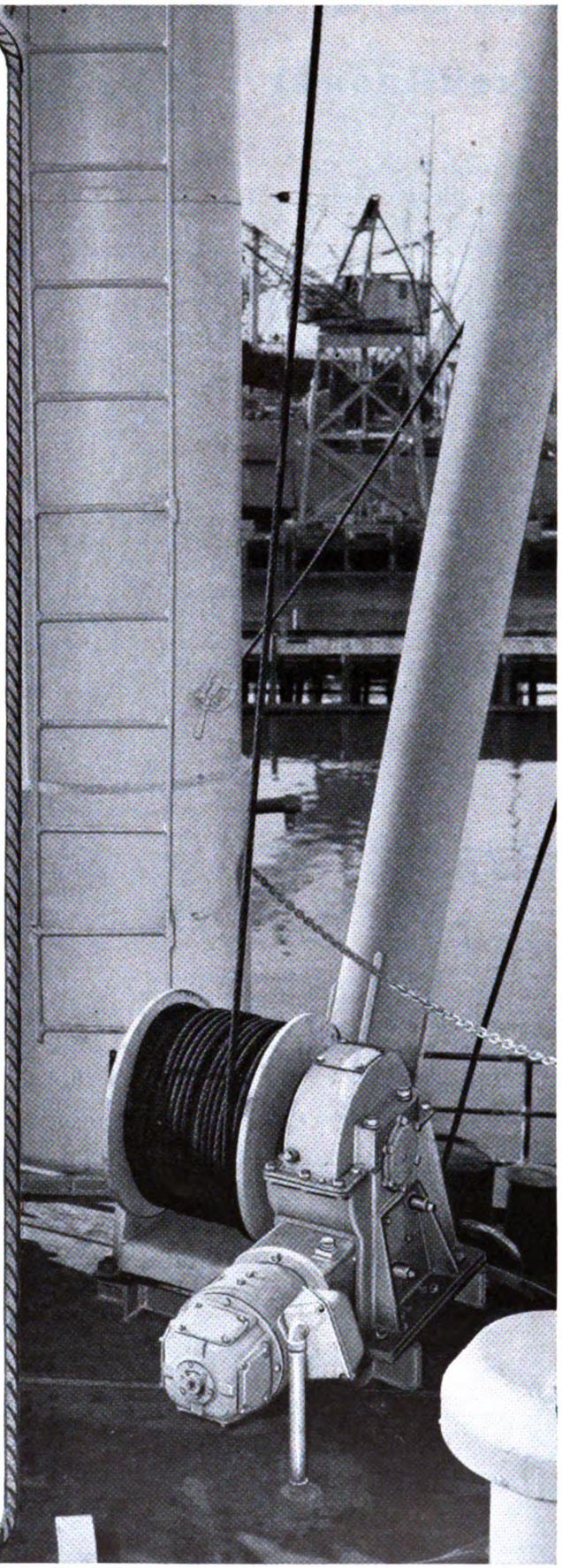
Want the details? Inquire at any "American Hoist" sales office (located in all principal ports) for literature and prices.



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SHAFT ALLEY (continued) Chatter

Donald Watson Elected VP Pacific Coast Direct Line

Donald Watson, formerly west coast manager of the Pacific Coast Direct Line, Inc., New York, is a newly-elected vice president of the company. He has been associated with the line in both traffic and operating capacities, since 1933, when its intercoastal service was inaugurated. In his new capacity he will continue to be headquartered on the Pacific Coast.

During World War II, Mr. Watson served in the Navy and at one time was naval aide to Edward R. Stettinius. He also served as northwest manager for the War Shipping Administration, towards the end of the war, and was recalled to special duty with Secretary of State, Edward R. Stettinius, to head up all transportation matters pertaining to the United Nations Conference which was held here in San Francisco.

Mr. Watson is a member of the Pacific Traffic Association, the Propeller Club, a director of the Pacific American Steamship Association and the Waterfront Employers Association and vice president of the Pacific American Shipowners Association.

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Alaska Steam Names Duryea To Succeed Brown

F. A. Zeusler, assistant to the president of Alaska Steamship Company, has announced the appointment of G. S. Duryea as general freight and passenger agent. Duryea succeeds the late W. E. Brown. Starting with the company in 1930 as purser, later to be successively promoted to assistant agent at Ketchikan, agent at Petersburg, to the Seattle staff of the traffic department, and during the war to become district superintendent at San Francisco. He advances to his new position from duties as assistant superintendent at Seattle.

Another Alaska Steam promotion is the advancement of W. R. (Bill) Wood from purser to agent at Nome.

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Captain Adler Receives Grace Line Award

Captain Alf Adler, master of Grace Line's SANTA ROSA, was presented with the company's Thirty Year Service Award by W. G. Holloway, chairman of the board of W. R. Grace & Co. Attending the ceremony was R. R. Adams, president of Grace Line and officials of both organizations.

Captain Adler joined Grace Line in 1918 as third officer on the SANTA LUCIA and in 1923 assumed his first command as master of the SANTA TERESA. In the years that followed Captain Adler commanded many of Grace Line's passenger liners including the *Santa Maria, Santa Barbara, Santa Clara, Santa Elena* and *Santa Paula.* He has been in command of the *Santa Rosa* since her return to peacetime service in February 1947.

In World War II Captain Adler served as a Commander in the U. S. Navy and for a time was assistant U. S. Naval Attache in Lima, Peru.

HIGHLIGHTING THE OBSERVANCE of National Maritime Day in New Orleans was the dedication of the new Seamen's Town House to the memory of lost seamen of World War II. Speaking at ceremonies for laying the cornerstone of the Seamen's Town House, Commissioner Grenville Mellen, of the Maritime Commission, urged that more hotels like it should be built in this country and abroad. A metal box containing historical documents of the Town House is shown being cemented into the cornerstone.

Officiating at the ceremony are left to right: SOLON B. TURMAN, Executive Vice-President Lykes Brothers and member of the Board of Directors Seamen's Town House; CAPTAIN J. E. HART, Mississippi Shipping Co., and President of the Seamen's Town House and COMMISSIONER MELLEN.

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Luckenbach Announces North Pacific Personnel Changes

Robert E. Piper, manager of the Portland district of Luckenbach Steamship Company has been named Northwest manager with headquarters in Portland. A. J. Morrill has been named acting district manager at Seattle. The changes follow the death of H. E. Rhoda, Luckenbach district manager at Seattle for the past decade and more. Morrill was named to the new position from marine superintendent for the Puget Sound district. He is succeeded in that position by Ronald Horne.

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Federal Agency Transfers J. J. O'Leary to Seattle

J. J. O'Leary has been transferred from Honolulu to Seattle to assume the position of deputy commissioner Bureau of Employees' Compensation of the Federal Security Agency. Insurance carriers under the Longshoremen's and Harbor Workers' Act arranged a special meeting in his honor in May. O'Leary succeeds to the position left vacant by the death of C. M. Whipple.

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Alcoa Announces New Scheduled Service

Beginning in July, The Alcoa Steamship Co., will have a new scheduled service from New York to the West Indies with C-1 freighters, the ALCOA PATRIOT and ALCOA POLARIS, it was announced recently.

Alcoa is bringing the two C-1s to New York to replace in part the passenger and freight service it has been providing with the ALCOA CAVALIER which will be transferred to New Orleans late in June.

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USMM Alumni Association Hold Maritime Day Dance

Climaxing Maritime Day in San Francisco was the semi-formal dance given at the Mark Hopkins Hotel by the Alumni Association of the United States Merchant Marine Cadet Corps.

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Delta Has Best Year in its History

Theodore Brent, president of Mississippi Shipping Company (Delta Line), has a big smile on his face these days. The company reports a net profit for the year ending December 31, 1947 of $3,101,228.

In his report to the stockholders he declared that the year 1947 was the best year in the history of the company.

Another reason for that smile is the fact that Delta has rounded out the fleet to a total, both in number of ships and in carrying capacity, much greater than ever before. The company fleet now consists of 14 vessels.

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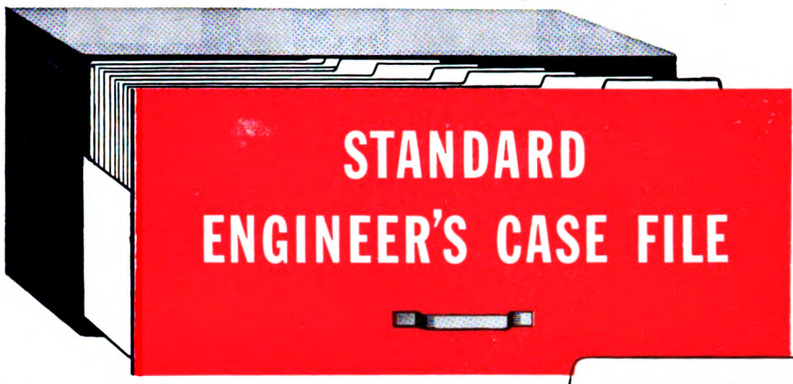
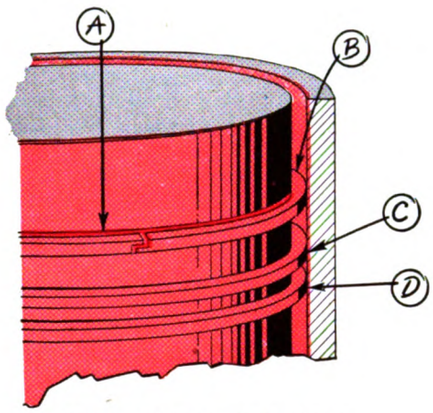


CASE D119A--MAINTAINING FULL POWER IN DIESEL ENGINES.



SECTION OF DIESEL ENGINE PISTON

Operators of Diesels in all types of service report RPM DELO Diesel Engine Lubricating Oil materially reduces power loss in three ways:

A. Detergent compounds prevent ring-sticking, allow full ring tension against cylinder wall, and this minimizes compression loss.

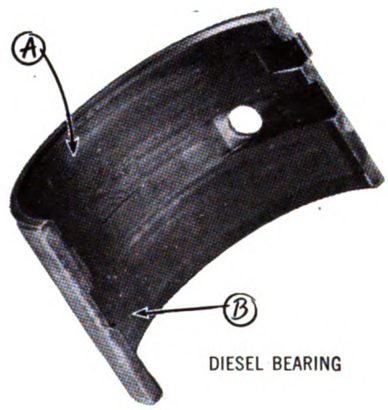
B. Metal-adhesion additive keeps full oil film on hot upper cylinder walls. These danger areas are often left unprotected by many oils.

C. RPM DELO Oil maintains a tough oil seal that stops blow-by of combustion gases.

D. An anti-oxidant increases the inherent stability of RPM DELO Oil's selected base stocks and resists lacquer formations on liners and piston skirts.

Other additives in this pioneer compounded oil prevent foaming, and control gum formations.

CASE D119B--PREVENTING FREQUENT BEARING REPLACEMENT DUE TO CORROSION.



DIESEL BEARING

In normal operation, Diesel engines require excess oxygen and operate at high temperatures. Under these conditions many unstable lubricants tend to turn corrosive and attack the lead in the copper-lead structure of alloy bearings. RPM DELO Diesel Engine Lubricating Oil is especially compounded to prevent this cause of bearing failure.

A. Selected base stocks are used that are naturally resistant to oxidation, the cause of most bearing corrosion.

B. Anti-oxidation compounds in RPM DELO Oil further reduce the danger of corrosion.

In laboratory corrosion tests, copper-lead bearing strips immersed in RPM DELO Diesel Engine Lubricating Oil showed considerably less weight loss than those protected by similar type oils.

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SHAFT ALLEY (continued) Chatter

AT A DINNER ATTENDED by shipping executives and marine surveyors and the hosts, Commercial Ship Repair, Seattle, and Everett Pacific Shipbuilding and Dry Dock Company, Everett, announced a working agreement to pool facilities by combining the drydocking operations of the Everett Pacific yard with the Seattle waterfront operation of Commercial Ship Repair for the purpose of effecting expeditious ship repair performance through coordinated efforts of the two firms, on all work requiring coordination, but with the companies continuing competitive status on all work requiring bids.

Among those present were from left to right; back row: S. K. SMITH, American Bureau of Shipping; JAMES BENT, M. & R. Div., U.S. Maritime Commission; J. J. FEATHERSTONE, Commercial Ship Repair; A. L. DICKERT, U.S. Coast Guard; E. A. BLACK, H. A. CAMAAN, Commercial Ship Repair; ROBERT LEBLANC, O. A. TUCKER, Everett Pacific Shipbuilding and Drydock Company; COMMANDER E. A. EVE, U.S. Coast Guard; FERDINAND SCHMITZ, JR., Everett Pacific Shipbuilding and Drydock Company.

Center, left to right: ROSS W. COPELAND, Commercial Ship Repair; GEORGE (KELLY) VIRGE, GEORGE SIMPSON, H. P. McLAUGHLIN, Everett Pacific Shipbuilding and Drydock Company.

Foreground, left to right: T. O. TODD, S. SWENSON, W. R. Grace and Company; A. E. SYKES, Tidewater Associated Oil Company; CAPTAIN S. C. CRAMB, Blue Star Line.

Alaska Transportation Promotes Karl Katz

Karl K. Katz has been appointed traffic manager for the Alaska Transportation Company. Formerly general passenger agent, Katz was elevated to the new position in connection with the company's expansion program, inclusive of operation of the ss GEORGE WASHINGTON, new flagship of the fleet, plying in passenger and refrigerated cargo trade between Puget Sound ports and Alaska.

Appointment of Wayne M. Alkire as the ATCO agent at Anchorage has also been announced. This is the first time the company has had an agent in the railbelt area of the territory. The appointment follows announcement of revision in regulations governing Alaska carriers by the Maritime Commission, Alaska Transportation Company has previously served only Southeastern Alaska but is now carrying cargo to the Westward which includes Prince William Sound.

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Calmar SS Appoints New LA District Agent

J. Arthur Johnson, well known in the shipping trades of the West Coast, recently became Los Angeles district agent for Calmar Steamship Corp., succeeding J. T. Forbes. Johnson headquarters in new offices at Pier A, Berth 5, Port of Long Beach.

A native of Seattle, Johnson served on various passenger ships sailing all world trade routes, and was on U.S. Shipping Board ships during the first World War. Prior to the last war, he was Seattle traffic manager for Calmar, and earlier had served in Seattle and Portland for the Calmar agency.

In September, 1941, Johnson went on active duty with the Navy, and was released in January, 1947. He entered into his own shipping agency at that time, and in February, 1948, joined Calmar at Seattle, from which city he soon was transferred to Long Beach. He is handling operations at Long Beach for the fleet of eight Liberties owned by Calmar, a ship arriving from the East Coast on a 10-day scheduling basis. The bulk of West-bound cargoes discharge at Long Beach, he reveals, the principal item being steel. East-bound, the freight is largely lumber.

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Bethlehem Steel Converts T-2 Tanker Into Carrier

For the first time on the Pacific Coast, a T-2 tanker is being converted into a molasses carrier for Paco Tankers, Inc., of Philadelphia by The Bethlehem Steel Co., Shipbuilding Division.

Now on drydock at the San Francisco yard, the NORTHFIELD which suffered grounding damage, is being repaired with renewal of 150,000 pounds of new plates. Extensive interior full stiffening is being done to give the vessel additional strength to carry molasses which is heavier than oil. She is also being equipped with the latest navigational aids, including radar and automatic pilot.

FROM TANKER TO DRY CARGO VESSEL . . . Cavanaugh Machine Works, in cooperation with Uhlin Machine Works, both of Wilmington, California, converted three U.S. "Y" tankers into dry cargo vessels for the government of Paraguay.

FRANK CAVANAUGH, left, Cavanaugh Machine Works and BOB MILLETT, Uhlin Machine Works, the contractors for the conversion; MAX LINDER, JR., Transmarine Navigation Company, agents for the owner; CAPTAIN FRED EFSEN, skipper of the PARAGUARI', first of the three vessels to complete conversion. The vessels were sold to the South American interests by Korody Marine Corporation, which conditioned them.

MS PARAGUARI'—Ready to sail for South America from Long Beach, California, with a capacity cargo of drums of petroleum products. Built in 1943-44 by Drava as an Army tanker she is 179 ft. overall, of 34,773 cu. ft. with a cargo capacity of 637 gross tons, 323 net tons. Her engines were overhauled at the Moore Dry Dock Company, Oakland.

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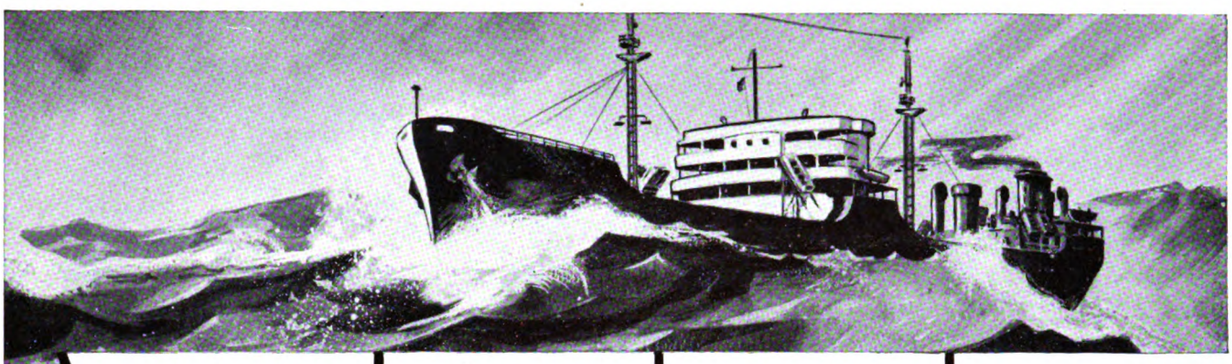

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Instant, accurate transmission of engine or docking orders. Self-Synchronous Design. 115 Volts A.C.

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Automatic Temperature Compensation and Automatic Supervision to control up to 10 cell test points. 115 Volts A.C.

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Main and Emergency Switchboards designed to specifications.

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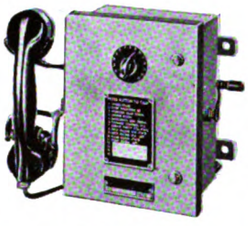
BENDIX DEPTH RECORDER
Distributors for Bendix Marine Supersonic Depth Recorder.



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LYKES QUARTER CENTURY CLUB . . . At the testimonial dinner given the members by Lykes Bros. Steamship Co., Inc. in New Orleans at Antoine's Restaurant. Members of the club have 25 or more years service with the company or affiliate companies of Lykes Bros.

Standing, left to right—L. S. POURTLESS, W. J. BOWERMASTER, E. P. HOLTON, EDUARDO LARROCA, J. F. MARTINEZ, B. B. CLISE, A. J. ABERLE, R. P. GRIGG, G. P. LAMBREMONT, W. C. FARRELL, J. C. HEAUSLER, E. J. FERNANDEZ, G. J. FRANKOVICH, SR., THEODORE HANSEN.

Seated, left to right—J. A. BERTEL, SR., E. G. PRAGER, JR., B. C. DUBLE, M. E. CASEY, G. W. HILL, J. A. TORREGROSSA, MISS MARGUERITE F. WHITE, S. B. TURMAN, Executive Vice-President, Lykes Bros.; MISS JOSEPHINE S. KRAFT, J. T. LYKES, President, Lykes Bros.; MRS. FLORENCE R. MATTHEWS, F. E. LYKES Chairman of the Board, Lykes Bros.; MISS ANTOINETTE H. PHILLIPPI, N. S. STORTER, F. J. SPRINGER, W. F. CRISS, W. F. AZCONA, H. A. BERNARD, SR., W. H. HAGAN, C. A. ANDREASON.

28th ANNUAL STEAMSHIP NIGHT of the Pacific Traffic Association of San Francisco. Top row, left to right—ELMO FERRARI, Manager, Port of Stockton; HUGH MIDDLETON, Pacific Coast Manager, De La Rama; LESTER CLOUD, Manager, J. H. Winchester; K. C. TRIPP, Pacific Coast Manager, Moore-McCormack; GENERAL ROBERT H. WYLIE, Manager Port of San Francisco; JACK PARKINSON, Loudon & Co., Los Angeles; DONALD WATSON, Vice President, Pacific Coast Direct Line; D. E. KERMODE, Pacific Coast Manager, States Marine Corp.

Center row, left to right—D. N. LILLEVAND, Vice President, Grace Lines; MISS BARBARA WATSON, District Manager, Amerian Mail Line; K. H. FINNESEY, District Manager, States SS; HOWARD MIDDLETON, Manager, Funch Edye & Co.; J. C. STRITTMATTER, District Manager, Olympic SS; RICHARD McLAREN, President, Pacific Transport Co.; CORNELIUS WINKLER, President, Transpacific Transportation Co.; J. E. LOWDEN, Lowden & Co.; T. E. CUFFE, President, Pacific Far East Line.

Bottom row, left to right—REAR ADMIRAL D. B. BEARY, Commandant 12th Naval District; JACK KELLY, States Marine Corp., Chairman of the committee in charge of the dinner; C. J. HARBEKE, President of the Pacific Traffic Association and Western Traffic Manager Denver & Rio Grande Western R.R.; RAY V. WINQUIST, Vice President, General SS Corp.; W. E. JONES, President Jones Stevedoring Co.; FRED L. DOELKER, Vice President, Johnson Line; JOHN A. BARTHROP, Pacific Coast Manager, U. S. Lines; GERALD DUNDON, Vice President, Pope & Talbot Lines; LEWIS A. LAPHAM, President, American-Hawaiian Steamship Co.

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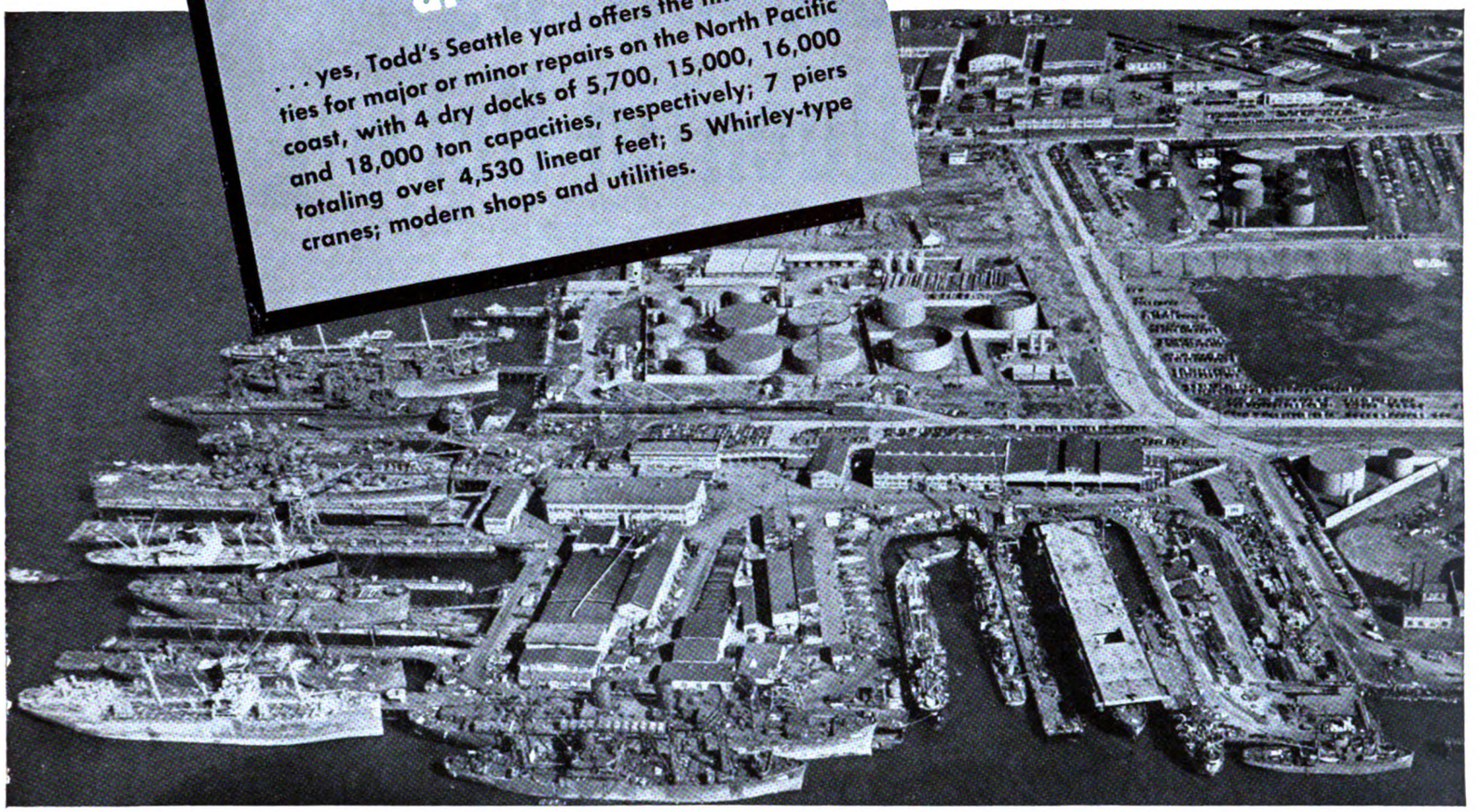
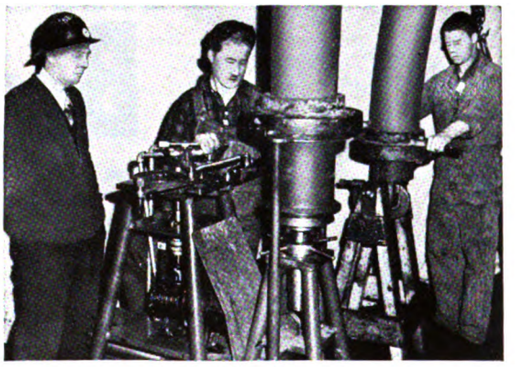
4 "BIG" SHIPS can dry-dock at one time at TODD Seattle

. . . yes, Todd's Seattle yard offers the finest facilities for major or minor repairs on the North Pacific coast, with 4 dry docks of 5,700, 15,000, 16,000 and 18,000 ton capacities, respectively; 7 piers totaling over 4,530 linear feet; 5 Whirley-type cranes; modern shops and utilities.



• View of the shipyard, located on northwest point of Harbor Island, close to 2 principal anchorages in Elliott Bay, Seattle's Harbor and connected by sidings to nearby tracks of the Northern Pacific.

Swift, expert service for vessels of every type and size is available to operators today at any one of Todd's major shipyards, strategically placed around our country's Atlantic, Gulf and Pacific coasts. No job is too small or too large for Todd to handle for you, from the repair or replacement of minor fittings and routine voyage overhaul to major structural work. A skilled staff of naval architects, marine engineers and other specialists is available—ready to work alone or with your consultants. The newest time and money saving machines and techniques are regularly employed. *In addition, all Todd shipyards provide mobile service, at anchor or at dockside.*



• The "lapping" machine (left), invented in a Todd, Seattle plant, saves up to 50% of time needed by old method (right) of "lapping" high pressure steam pipes of 1" to 9" diameter.

TODD SHIPYARDS CORPORATION

LOS ANGELES DIVISION • SEATTLE DIVISION

Conveniently located on Atlantic, Gulf and Pacific Coasts

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Here's News from Quentin Herwig

MARINE SERVICE, INC.
111 West Denny Way, Seattle 1, Wash.
has been appointed distributor in the Puget Sound area for

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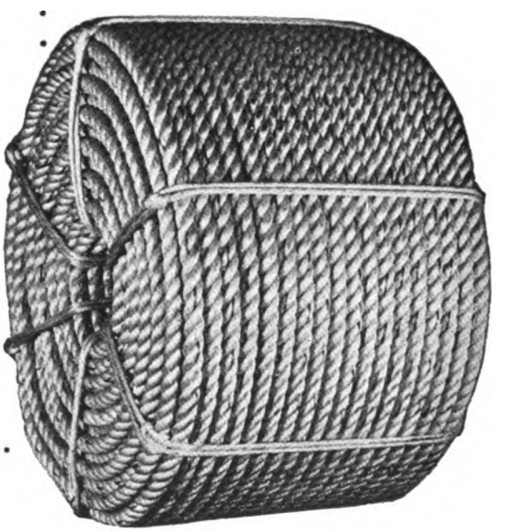

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OF AMERICA'S MARITIME INDUSTRIES
Shipbuilding Naval Architecture
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Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

JULY, 1948 Vol. 43, No. 7

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Editorial Features

Editorial—The Marine Exposition—Pro and Con.....19
SS ALBLASSERDIJK 20
Port of Mobile—Boom Town with a Future.....21
Washington Reporting.....25
Trial Run.....27
Naval Architects Meeting at Newport News.....28
Operating Ideas:
How to Keep Fueling Time to a Minimum.....34
How to Figure Stresses in Cargo Handling Gear 35
American Export Lines Acquire New "4 Ace" 38

Departments

Shaft Alley.....10-16
Societies 30-32
Operating Ideas.....34-38
Ports 40
Equipmentalk 46-50

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The Marine Exposition—Pro and Con

The Third National Marine Exposition held at the Grand Central Palace, New York, May 17th to 22nd, left much discussion in its wake. About a third of the exhibitors appeared satisfied with the results obtained while the majority opinion ranged from a feeling that the week was a total loss to a belief that while their participation was of some benefit it was not worth the cost.

What was the trouble? The most widely met criticism was that the promoters had failed to properly publicize the exposition, leaving the promotion of attendance almost entirely to the invitations sent out by the exhibitors. Attendance was small even though the show was open to the general public from 2 p.m. to 10:30 p.m. Monday through Friday and from 2 p.m. to 6 p.m. on Saturday. There wasn't much of interest to the public, but there were many fine exhibits of interest and value to steamship executives and operating men.

But only a small proportion of the executives and operating men in the New York area attended. The executives weren't sold on the idea of its benefits and so they didn't urge their operating men to attend. The marine press and the newspapers generally did not play it up in advance because they were not given basic information about the exposition.

Lack of advance publicity is not, however, the basic difficulty with an exposition having exhibits of primary interest to steamship men. The fact is that there are not enough steamship executives and shoreside operating men in the New York area to keep an exhibition hall like Grand Central Palace filled from 11 a.m. until 10:30 p.m. five days. And the exposition itself is not enough to attract steamship men from other sections of the country. In contrast with many other industries the men in shipbuilding and ship operating who exercise policy and buying influence are comparatively few in numbers.

Solutions advanced by various exhibitors during the week included these 1) hold future expositions in a smaller place; 2) keep it open from 4 p.m. to 11 p.m., thereby permitting exhibitors' personnel to take care of their regular duties during the business day when few steamship men attend the exposition; 3) hold future expositions in connection with either the Propeller Club's Annual Merchant Marine Conference or the annual meeting of the Society of Naval Architects and Marine Engineers when large numbers of marine men from all parts of the country are in New York.

It was pointed out that successful, less expensive expositions are held in armories or in hotels. The National Purchasing Agents Association at the end of May held a show of some forty exhibits in three rooms of the Waldorf-Astoria Hotel in connection with its annual convention, thereby insuring heavy attendance.

These points appear to be ones that must be handled properly if future marine expositions are held and the majority of exhibitors fully satisfied. Although the promoters of the past three shows have announced a fourth one will be held at Grand Central Palace for May 22-27th, 1950, there appears to be considerable doubt at present whether they will have the cooperation of any marine organizations unless their policies are adjusted to fit conditions in the marine field more closely. Two years may cause changes in attitude all around.

The following companies and organizations participated with exhibits in the Third National Marine Exposition:

Agwilines, Inc.; The Airetool Mfg. Co.; All-Bilt Uniforms, Inc.; American Exports Lines, Inc.; American Merchant Marine Library Assn.; American Merchant Marine Institute, Inc.; The American Seamen's Friend Society; American Steamship Purchasing Agents Group; S. Appel & Co., Inc.; Armor Clad Co.; Army Transportation Association; Arndt Metalcraft Corp.; Association of American Ship Owners; Association of Water Transportation Accounting Officers.

Bailey Refrigeration Co., Inc.; H. Barrow Co., Inc.; Bendix Aviation Corp.; Bethlehem Steel Company; James G. Biddle Co.; Carb Manufacturing Co.; Chrysler Corporation — Airtemp Division; Clark Equipment Co., Clark Tructractor Division; J. S. Coffin Jr., Co.; Commercial Filters Corp.; Condenser Service & Engineering Co., Inc.; C-O-Two Fire Equipment Co.; Cler-Site Co.

Dravo Corporation; Eveready Canvas Corp.; E. F. Drew & Co., Inc.; General Electric Co.; Gulf Oil Corp.; Robert L. Hague Merchant Marine Industries Post #1242, American Legion; Hooper Valve Co.; Ideal Supply Co.; International Balsa Corp.; Johns-Manville Sales Corp.; Karl Instrument Co.; Walter Kidde & Co., Inc.; Knapp Mills, Inc.

Leslie Co.; Lignum Vitae Products Corp.; The LOG; Magnus Chemical Co.; Mackay Radio & Telegraph Co., Inc.; Marine Electric Corp.; Marine Engineering and Shipping Review; Marine News; Marine Plastics Co.; Marine Progress; Maritime Association Port of New York; Maritime Coast Pilots; The Metal Lumber Corp.; Metalock Repair Service, Inc.; Metropolitan Plumbing Supply Corp.; Metropolitan Refractories Corp.; Mississippi Valley Association; Murray & Tregurtha, Inc.; National Federation of American Shipping, Inc.; National Lead Co.

National Malleable & Steel Castings Co.; Oakite Products, Inc.; Owens-Corning Fiberglas Corp.; Ponsell Floor Machine Co., Marine Division; Pitometer Log Corp.; Port Stewards Association of New York, Inc.; The Propeller Club of the U. S.

Radiomarine Corporation of America; Regent Hotel Supply Co.; Republic Steel Corp.; Republic Supply Co.; John A. Roebling's Sons Co.; Russell Bros. Towing Co.; Self Winding Clock Co.; George G. Sharp; Simmons Co.; Sims Pump Valve Co., Inc.; Sinclair Refining Corp.

Sperry Gyroscope Co.; Stevens Insti-

(Continued on Page 42)

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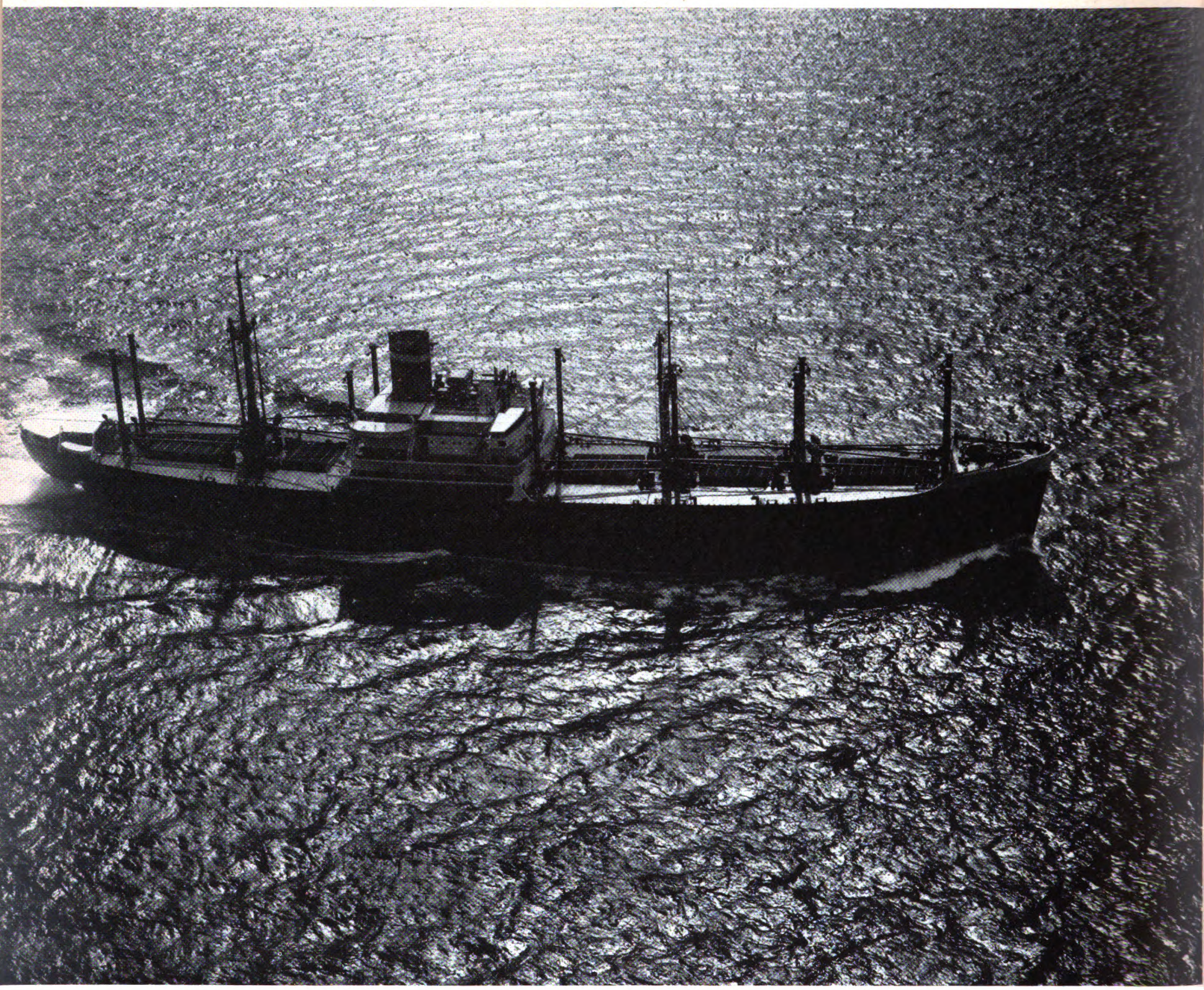

MOBILE BUILT AND MOBILE BOUND..

SS ALBLASSERDIJK built by Gulf Shipbuilding Corp. for the Holland-America Line.

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PORT OF MOBILE

BOOMTOWN WITH A FUTURE

From twenty-fourth to sixth ranking port in the U.S. in twenty years—and it's only the beginning.

The port of Mobile today is strongly reminiscent of the days when Cotton was King. Then the stern-wheelers chugged up and down the Chickasaw and barkentines and brigs sprinted up Mobile Bay

competing for the cargo offerings. Today King Cotton has nearly vanished, but tremendous quantities of bulk cargo—bauxite, coal, nitrate, manganese and iron ore—funnel through Mobile to find their way into the everyday living of a more modern world.

This brisk trade with the world did not find its way to Mobile by chance, but was sought throughout the world by far-seeing businessmen who are responsible for bringing the Port from twenty-fourth place on the nation's list twenty years ago up to sixth in importance today. And those men are not yet satisfied for they sincerely believe they can make Mobile first port of the land. Nor are they wasting their time with idle wishes. They have a head start which they are not planning to sacrifice.

Time to Expand

The humming activity of the port today is the result of combined efforts on the part of the State, business and civic groups, and individuals. Twenty years ago June 25th, the State overhauled the waterfront. It provided the physical facilities for handling world trade. But adequate facilities do not garner revenue producing cargoes, and it took the best of Mobile's salesmen to lure a busy nation's commerce over its docks.

That their efforts have been rewarded is evident from some recent figures released by the Department of State Docks, State of Alabama. These show that in 1947 more than one and one quarter million tons of coal were shipped through Mobile. The Port's exports and imports during 1947 were valued at more than one hundred and thirty million dollars. At a time when many ports were suffering from lost tonnage, Mobile was on the increase. Tonnages over the State increased twenty-three per cent in 1947 over 1946. There was an increase of fourteen percent in cars handled by the State Docks Terminal Railway 1947 over 1946. And for the same period an increase of twenty-one percent in vessels docked at State Dock facilities. These figures represent only the activities of the State owned facilities and do not speak for the numerous private facilities such as the United Fruit Company's banana docks, etc.

What did this increase in activity indicate to the men who built the Port? They took a look at the figures and decided it was time to expand. They do not believe in waiting until they get the business and then building facilities to handle it—they say build the facilities and then get the tonnage to flow over adequate docks. And that's just what they are doing.

Twenty years ago the State Docks were built at a cost of ten million dollars, and during those years two million dollars were expended on improvements. This year four-million more dollars will be spent to extend the facilities down the river and a twenty million dollar expansion program is in the planning stage. The tremendous gain in tonnage handled through Mobile during the past twenty years has brought its business and industrial capacities to an equivalent level, and both City and State are looking toward another twenty years of expansion with attendant benefits.

Mobile's Modern Facilities

The present facilities of the Department of State Docks and Terminals for Alabama are among the most modern in the world and are evidence of the foresight of their planners twenty years ago. These facilities are situated on the west side of the Mobile River, a short distance north of the city's main business district. Built to serve industry and agriculture the State Docks system is equipped with more than two miles of concrete wharves, where as many as twenty-two ocean-going vessels of thirty-foot draft can be accommodated at one time, and the expansion program now underway will increase the capacity from twenty-two to twenty-five such vessels. Covered warehouse floor space exceeds 42 acres.

Principal units of the Docks System includes:

1. Three piers each 1600 feet long, with steel and concrete transit sheds and warehouses protected by sprinkler system.
2. A shipside Bulk Material Handling Plant capable of handling 600 tons of coal or other bulk cargo per hour outbound, and a capacity for unloading from ships of 900 tons per

DOWNTOWN WATERFRONT is a great asset to the Port of Mobile. Here the SS ROBIN DONCASTER heads out to sea after being reconverted at Mobile's busy shipbuilding and repair yards.

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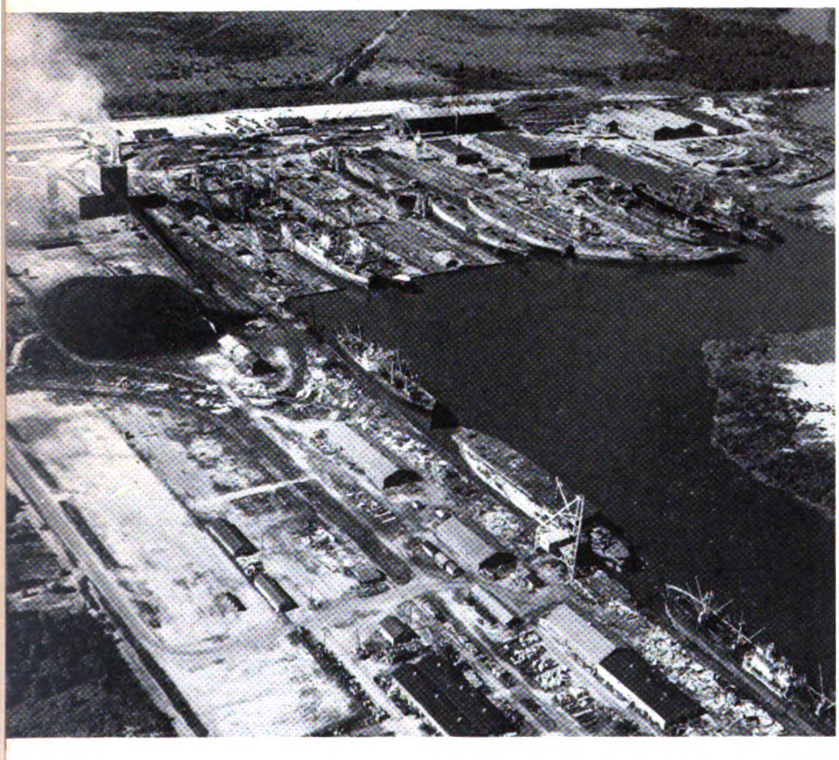
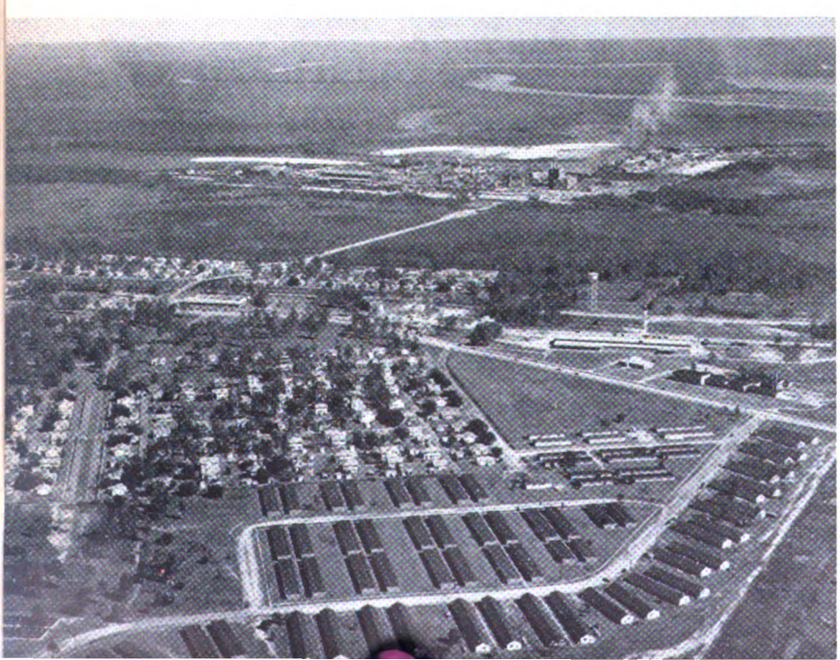
SIDE LAUNCHING at the Gulf Shipbuilding Corporation's Chickasaw yard.



FLAT-TOP FACTORY, or so it would seem from this aerial view of the Gulf Shipbuilding Corporation's yard. A subsidiary of Waterman Steamship Corporation, this yard bought twelve surplus British carriers and is converting them to C-3 type vessels. (See The LOG for March and elsewhere in this issue.)



LABOR RELATIONS ARE EXCELLENT in the Gulf area, and one of the reasons is evidenced in this photo. These homes were built by Waterman for sale to their shipyard employees. Financed by the company the terms are easy and the homes are good — as well as convenient to the yard (background). It also drastically cuts labor trouble

hour of bauxite ore, manganese ore, or other like bulk material.

3. A Class "A" shipside Bonded Cotton Warehouse with high density press.
4. A Terminal Railroad connecting the docks system and adjacent industries with all railroad lines serving the port.
5. A shipside Cold Storage Plant with 500,000 cubic feet of storage space and a quick freezer for seafoods, meats, vegetables and fruits.
6. An Industrial Canal of one mile in length and 15-foot depth, with sites for tonnage producing industries.
7. A shipside Bulk Material Warehouse for handling, storing and sacking nitrate and chemicals, with 35,000 tons storage capacity.

In addition there are numerous auxiliary facilities, among them a 75-ton electric derrick, locomotive cranes, lift trucks, tractors, conveyors, and other equipment to serve a large volume and variety of commerce.

Work on the three new berths is well underway. Where before there were six railroad piers 750,000 cubic yards of dirt has been dumped to fill the gap, and piling is being driven upon which to build the continuous marginal wharf. Transit sheds 190 feet wide will be constructed and the total width of wharf and platform will be 256 feet.

Bulk Material Handling Plant

The Bulk Material Handling Plant of the State Docks System is one of the Port of Mobile's most valuable assets. Ships come alongside to discharge bauxite, Chilean nitrate, manganese, and iron ore, and to load coal and coke. Last year the plant handled over three million tons, a million tons more than the previous year.

This extensive and specialized unit for handling bulk cargoes is located at Three Mile Creek and Mobile River. The harbor at this point is 900 feet wide and dredged slip is 400 to 600 feet wide and of sufficient depth for vessels of thirty-foot draft. The wharf is 1150 feet long, providing berthing space for two large vessels. The electrically operated plant consists of a rotary car dumper, a movable grab-bucket unloading tower, two movable grab-bucket unloading and reclaiming towers, a movable loading and stocking tower, and a belt conveying system.

The plant handles coal, coke, bauxite, manganese and iron ores, phosphate rock and other commodities that can be handled on a 42-inch conveyor belt, in the following movements: car to vessel, car to storage, vessel to storage, vessel to car, storage to vessel, storage to car and vessel to vessel.

Handling capacity of the Bulk Material Handling Plant is 600 to 900 tons per hour and storage space is provided for 35,000 tons. Weightometers on the unloading towers and car loading hopper automatically weigh material received at the plant by vessel, and railway scales weigh material delivered by rail. After dumping, the empty cars are returned to the yard by a gravity switchback. The

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wharf has a concrete deck 18 feet wide upon which there is a shipside railroad track. Connections for fresh water, bunker oil and electric power are provided.

Imported bulk fertilizers, principally nitrate, is afforded covered storage at shipside through special facilities provided by the State Docks. These unloading towers handle the cargo from the vessel and thence it is moved on a 36-inch conveyor belt system into a 50,000 square foot storage shed. The nitrate is rehandled in the shed by a ⅜ cubic yard shovel to a 24-inch belt conveying system to vibrating screens and thence through automatic weighing, sacking and sewing machines, ready for delivery to the railway cars.

Covered Storage

Shipside storage warehouses and transit sheds provide covered and fire-protected space with a total area of approximately 42 acres. The storage compartments are clean and pallets are generally used in the handling of storage and freight therein. Unlimited open storage space is also available.

A Class 3 Customs Bonded Warehouse is provided for dry cargo and a Class 4 Bonded Space is available for bulk freight in the open.

Among the advantages offered at the State Docks are the three shipside railroad tracks on each of the 1600-foot apron wharves, with crossovers between ships' berths, thus allowing uninterrupted switching of cars to any point on the wharves while ships are loading or unloading cars at any or all berths. These marginal tracks enable the handling by ships' gear of certain types of cargo direct between vessel and open-top cars without the added labor cost for handling by State Docks. Barges can be placed alongside of vessels in order that heavy freight may also move direct to and from the vessel by ship's gear. A Log and Timber Boom is also provided where logs and timbers are dumped and stored in the water to be preserved while being held for ultimate exportation.

Business Enterprise and Initiative

Private industry is equally responsible for the rapid growth of the Port of Mobile. Waterman Steamship Corporation, which makes Mobile its home port, has grown with it until today it is among the leading steamship companies in the world, owning fifty-three modern vessels and operating many more under charter. Various subsidiaries of Waterman have shared in the growth of the parent company. One of the most important of these is the Gulf Shipbuilding Corporation which built ships for war and is now actively building ships for peaceful trade.

Perhaps the business initiative to be found in Mobile is best shown by example. Gulf Shipbuilding Corporation, without previous contracts for sale, went out and purchased twelve surplus aircraft carriers and proceeded to convert them into modern C-3 type vessels. (See The LOG for March.) Six of these vessels have been completed and sold to foreign steamship companies. It is not often today that a shipyard buys and builds vessels

ADDSCO — a familiar name throughout the marine industry. This aerial of the Alabama Dry Dock and Shipbuilding Company shows its two yards sprawled across the Mobile River. During the war this plant turned out T-2 tankers and Liberty ships. Now it is doing a booming business in ship repair and conversion.

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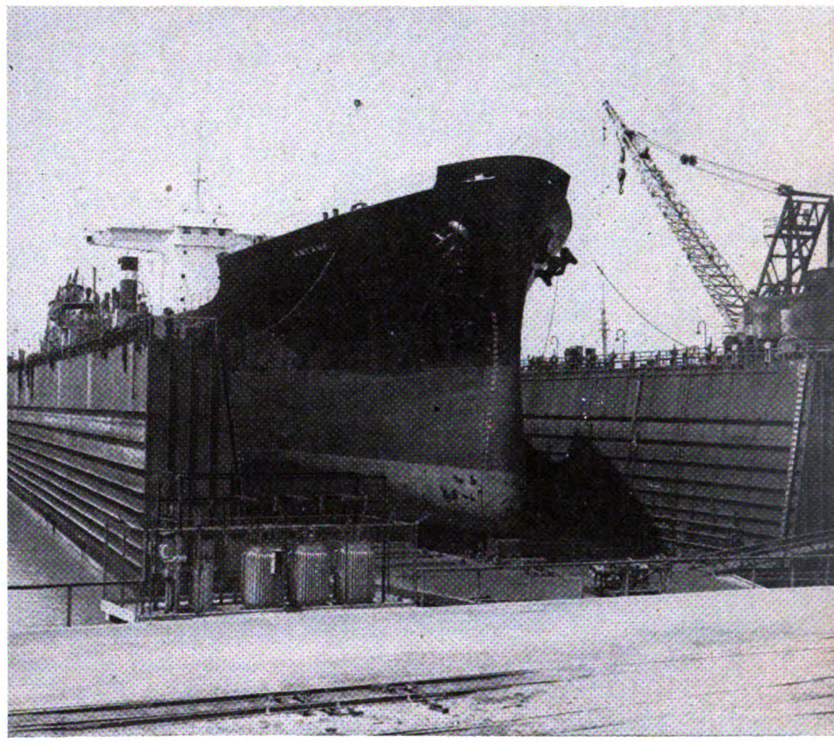

DRY DOCKING A GIANT TANKER in one of its six floating dry docks, ADDSCO makes use of an invaluable asset. This particular dry dock can handle up to 16,000 tons. The others have capacities of 12,000 tons, 10,000 tons, 8,000 tons, 5,000 tons, 3,400 tons, and in addition the yard has a 2500 ton marine railway.

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SHIPS ARE BUSINESS in Mobile. The two ADDSCO yards have a total wharf space exclusive of dry docks which amounts to more than 13,000 linear feet, and when this footage is occupied by ships as it is now, that means prosperity for the Port of Mobile.

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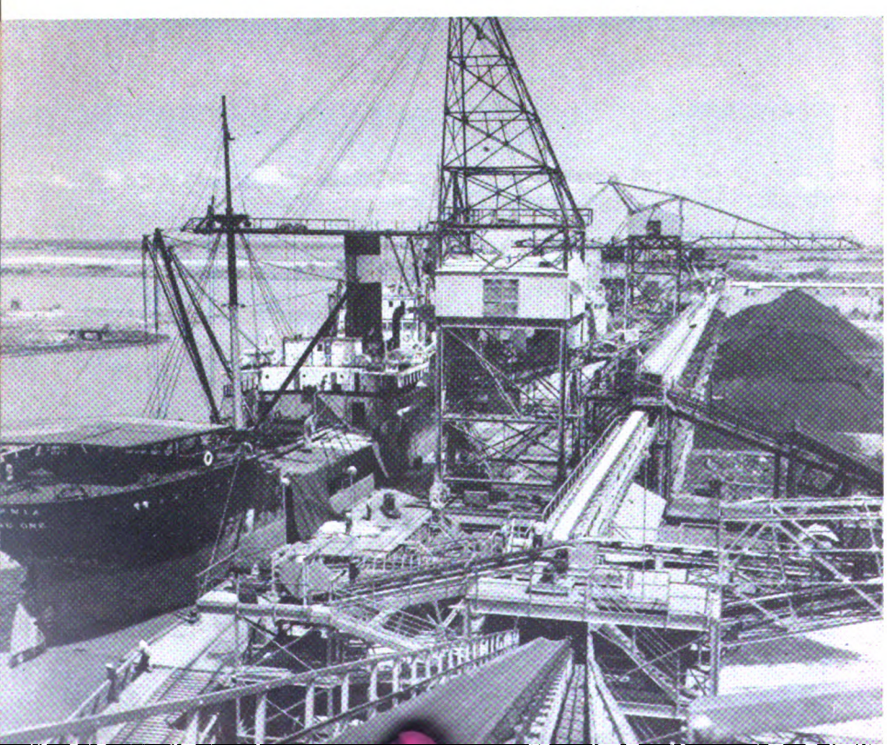
NOW AND THEN—at the left two powerful tugs nudge a sleek modern liner of the Waterman Steamship Corporation alongside one of Mobile's efficient modern docks. Above, however, is a different age. But even then Mobile did a rushing business and these craft brought the world's commerce into her port.

TWENTIETH ANNIVERSARY of the Alabama State Docks June 25, 1948, marks twenty years of efficient service to Mobile. These modern facilities are largely responsible for lifting the Port of Mobile from twenty - fourth place in 1928 to the sixth ranking U. S. port today. A four - million dollar expansion is already underway and a twenty-million dollar expansion is in the planning stages.



BULK MATERIALS HANDLING PLANT of the State Docks makes a major contribution to the port's tonnage. This plant is capable of handling 600 tons of coal or other cargo per hour outbound, and has a capacity for unloading ships of 900 tons per hour of bauxite ore, manganese ore, or other like bulk material.

without a contract, nor it is common in this day of soaring prices for a United States yard to build for foreign companies.

Another example of the type of business enterprise behind Mobile's success story is the way in which Waterman Steamship Corporation turned a costly marine accident into a thriving business for the port. One of Waterman's ships steaming into Mobile Bay ran aground. In the process of freeing the vessel, it was discovered that the floor of the Bay was encrusted with thousands of years' growth of oyster shells. Waterman promptly turned this discovery into a thriving industry. It sent out a dredge to get the shells up from the bottom, loaded them into barges, and towed them up the river to the Bulk Material Handling Plant and another industrial site on the Industrial Canal. Here, where they had constructed two plants, the shells are ground into fertilizer, chicken feed, and cement —all products which are shipped out through the Port of Mobile.

The Aluminum Company of America also saw the advantages of Mobile and erected a giant processing plant for bauxite. Alcoa ships steam up and down the river bringing in bulk ores and taking away finished products, and these ships provide business for the Port. As evidence of the strong attraction Mobile has for industry and trade, Alcoa Steamship Company recently switched its new passenger ships from other U.S. ports to Mobile.

Other steamship companies, both U.S. and foreign are becoming increasingly aware of the advantages this Southern port holds for trade, and many have long been serving it. Luckenbach Steamship Company recently passed the quarter century mark for service in and out of Mobile. In all, there are seventy-one steamship lines serving the port.

Shipbuilding Activities

Listed among the high priority industries contributing to the port are the ship repairing activities of the Alabama Dry Dock & Shipbuilding Company. These yards, sprawled across both sides of the

(Continued on Page 26)

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WASHINGTON Reporting

By The LOG's Own Correspondents

Industry-Government Shipping Committee Appointed

A highly secret top-echelon shipping committee has been appointed by Secretary of Defense Forrestal to study the military aspects of the American Merchant Marine. It is probable, but not yet certain, that its recommendations for $330,000,000 of shipbuilding will be implemented by the Administration and by Congress.

Tentative breakdown of the money involved seems to indicate a proportion of about 60% by the Government and 40% by private shipowners. The larger share by the Government is predicated upon enactment of present legislation before Congress for a 50% construction differential, plus payment by the Government of military features in the vessels and other features required by the U. S. but not required in similar foreign vessels.

If the recommendations of the committee are adopted, American shipping will not only get a shot in the arm but basic Government policies will be formulated leading to a stable long range program guaranteeing the nation a strong, balanced and successful merchant fleet and maritime industry.

The committee is made up of two representatives from the Department of National Defense, Vice Admiral E. W. Mills, Chief, Bureau of Ships and Rear Admiral William Callaghan, Chief, Naval Transportation; W. W. Smith (Vice Admiral, Retd.) Chairman, U. S. Maritime Commission, and Frazer A. Bailey, President, National Federation of American Shipping.

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State Dept. Shipping Division Slapped by Congress

The Shipping & Inland Transportation Division of the Department of State has incurred the wrath of not one, but two potent and powerful committees of Congress, the Senate and House Appropriations Committees. Moreover, with the exception of work in connection with repatriation of American seamen, the Shipping Division's work will be abolished.

It is one of the few occasions in many years that both a House and Senate Committee has openly criticized a unit of a Federal Department, indicating an implied awareness of Congress to the problems of the Merchant Marine, and at the same time indirectly championing the work of the U. S. Maritime Commission as the Government agency who should deal with shipping.

With respect to the State Department's request for a budget of $107,000 for fiscal 1949 for its Shipping Division, the Senate Appropriations Committee remarked with a bite:

"The involvement of this Division in domestic affairs this year has been wasteful of Government money and has had disastrous effects upon American shipping. . . . That $67,000 of the total $107,000 requested for the Shipping & Inland Transportation Division is denied."

The House Appropriations Committee said, with pungency:

"The Committee wishes to reiterate its previous recommendation . . . that the Department of State get out of the operating phases of activities for which other agencies of the Government are responsible. There is little or no justification, for example, for . . . a Shipping Division with 21 employees. The substantive work in connection with all of these functions is undoubtedly performed in the departments of the Government responsible for these types of activities."

Some Washington observors see in the twin reports an answer to the industry's oft-told request that too many Government agencies, departments, bureaus and commissions have their fingers in shipping.

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USMC Candidates

Leading candidate for appointment to the commission vacancy created by Commissioner Richard Parkhurst's departure is William S. (Pete) Newell of Bath, Maine, Iron Works and present Chairman of the Board of United Seamen's Service. Although Mr. Newell does not qualify under the Merchant Marine Act of '36 due to his affiliation with a shipbuilding concern, it has been reported in Washington that prominent Congressional leaders would be willing to introduce and have passed a resolution making an exception in his case.

While it is no means sure that Mr. Newell would accept, he is believed to be the most likely of the following who have been mentioned and who have received strong support for the vacancy: Joseph O'Brien of New York, Andrew Sides of Maine and Colonel Alvin Barber who recently retired after long service as Manager of the U. S. Chamber of Commerce's Transportation Department.

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Panama Canal Tolls

The White House will not review a Presidential Proclamation increasing Panama Canal tolls effective October 1. It has been indicated that it will have no objection to the shipping industry seeking a Congressional investigation of the present toll system, or legislation which would freeze the present 90c-a-ton rate pending an investigation.

National Federation of American Shipping, which has been leading the fight to prevent toll increases and for legislation which would, in effect, decrease tolls in order to bring relief to domestic shipping, expects to press for legislation changing present Government policy with respect to the charging of interest on the Panama Canal investment.

The NFAS contends that if the present interest rate on the Canal investment would be properly charged to national defense, Canal tolls on merchant shipping might be reduced from the present 90c to 60c a ton.

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New Overtime-On-Overtime Bill

Representative Angier L. Goodwin, author of the Goodwin Bill to remove the threat of overtime-on-overtime payments, introduced a new bill, H. R. 6534, which has been referred to the Committee on the Judiciary.

The new bill defines and limits the jurisdiction of the courts to enforce liability or impose punishment for or on account of the failure of the employer to pay overtime-on-overtime.

Congressional leaders have reportedly given the 'green light' to the new bill, which is not considered to be anti-labor, and passage is expected before Congress adjourns.

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USS Faces Closedown

Unless funds are forthcoming from the shipping industry this summer, United Seamen's Service will practically close the doors of its worldwide seamen facilities in September.

The shipowners have appointed a top executive committee to consider the matter, and to make recommendations as to whether the industry will participate financially.

If USS folds, several large companies will be forced to institute their own facilities in foreign ports, notably Standard Oil of New Jersey.

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12-Passenger Vessels

The Safety-of-Life-at-Sea Conference being held in London has reached agreement that cargo vessels should not be allowed to carry more than 12 passengers, it was disclosed in Washington.

Several Scandinavian countries, and France, had pressed for relaxation of the international requirements which would have enabled cargo vessel operators to increase beyond 12 the number of passengers carried.

While the 12-passenger limitation was retained, a construction committee of the Conference will recommend relaxations from full passenger vessel requirements where cargo vessels carry a small number of passengers.

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Industry To Oppose ODT

Office of Defense Transportation feels it should have jurisdiction over harbor craft, coastwise and intercoastal shipping in event of another emergency.

The industry will oppose such views, especially over any attempt to obtain jurisdiction for foreign and intercoastal shipping.

The views of the ODT came to light when the National Resources Board requested ODT to outline its views as to

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WASHINGTON

its functions in another emergency, and the latter called an executive Washington meeting to discuss its jurisdiction in a next emergency.

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ECA Shipping Division

Colonel Arthur Syran, employed by NFAS and loaned to the Army to head a shipping mission to the Japan-Korea area, is being mentioned to head the Shipping Division of the Economic Cooperation Administration in Washington.

Colonel Syran is now enroute to Washington for conferences with the War Department. The Federation has made no commitment to ECA for the employment of Syran.

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Long Range Program

Despite differences of opinion in the industry as to which bill now before Congress should have priority, it is anticipated that sufficient of the 11 points contained in both H. J. Res. 377 and 398 will be enacted before adjournment to assure the start of a shipbuilding program.

Since 377, providing for extension of construction subsidies to domestic shipping and favoring the principle of accelerated depreciation, was introduced first, some segments of the industry feel it should have priority over 398 which contains nine other points of importance to the industry.

Among the 11 points which it is felt will receive Congressional endorsement are: accelerated depreciation; the payment by Government of all national defense features and excess requirements for features not carried on competing foreign ships; fixed construction differential of 50%, at least for vessels in foreign trade; turn-in of vessels not less than 12 years old instead of the present 17-year minimum; repeal of the requirement that the Maritime Commission investigate and specify manning, wages and working conditions on subsidized vessels, and possibly reduce the interest rate on deferred payments made by shipowners to the Maritime Commission.

The outlook for extending the construction differential to domestic shipping, the removal of discriminatory and non-compensatory rates by land carriers on competitive water traffic and the provision that each passenger vessel may be owned by a separate corporation with limited liability is poor at present.

It is beginning to become apparent however that the entire maritime industry may join hands again (labor, management and Government) as they did in opposing the transfer of dry cargo ships to European nations, to assure the success of legislation embodying a large part of the two Bills. Companion legislation has been introduced also in the Senate by Senator Wallace H. White, Jr.

West Coast Shipping's Greatest Threat

The greatest threat to a healthy and successful West Coast shipping industry under the American flag since Pearl Harbor is the reestablishment of the Japanese Merchant Marine.

Unfortunately there is more than mere rumor that the Japanese Merchant Marine, possibly its prewar entire maritime industry, may be reestablished.

Recommendations embodied in a report by Overseas Consultants, made at the request of the War Department, recommends the immediate expansion of the Japanese fleet to four million tons, with corresponding provisions for shipbuilding and ship repair facilities in Japan. Japan's 1939 Merchant Marine consisted of about 4.5 million dwt. of vessels of 1,000 gross tons and over.

The industry, through NFAS, has already protested to the War Department on the highest level. It is expected that further protestations will be made to determine if there has been any change in national policy with respect to the part Japanese shipping shall play in world affairs of the future.

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Maritime Commission to Review Transport Needs

The Maritime Commission will review the nation's domestic oil transport requirements to decide whether conditions warrant an appeal to Congress for authority to place additional tankers under general agency operation.

Although there are sufficient tankers to handle East Coast needs during the summer, there is a shortage of tankers for world oil during the winter.

The Commission has authority to operate tankers under the 1936 Shipping Act, but must obtain funds from Congress to cover the costs of actual operations under agency arrangements. The MC has 15 tankers under general agency contracts and sees little need for a revised rate structure when the Government is selling and otherwise disposing of its tankers.

Seasonal shipments are still supplying domestic needs, and there is no letdown in the Government's plan to dispose of the remaining 15 tankers which remain out of more than 450, which the Government handled during the war.

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USCG Appears Out at Disciplinary Hearings

S. 1077, a Bill to permit U. S. Coast Guard officers to preside at Merchant Marine disciplinary hearings, was tabled on June 3 by the House Judiciary Committee. Although the Bill passed the Senate July 17, 1947, and had been favorably recommended by a Subcommittee of House Judiciary, it now appears dead at this session of Congress.

Port of Mobile

(Continued from Page 24)

river, rank with the best in the country. Alabama's two repair yards are each completely equipped to effect repairs on all types of commercial craft and some types of naval vessels. The yards have six floating dry docks, and one marine railway with a lifting capacity of 2,500 tons—the dry docks having capacities of 3,400 tons, 5,000 tons, 8,000 tons, 10,000 tons, 12,000 tons and 16,000 tons.

The total wharf space at both Alabama yards for accommodation and safe mooring of vessels, exclusive of space occupied by dry docks, amounts to approximately 13,400 linear feet. Of this total, 9,100 feet are available at the Main Plant, located on Pinto Island on the east bank of the Mobile River, and 4,100 feet are available in the form of four wharves at the Lower Repair Yard located on the west bank of the Mobile River.

The Record Speaks for Itself

A factor for other ports to reckon with, Mobile now ranks sixth among the major ports of the U.S. in foreign tonnage handled. Exports and imports handled last year totalled 3,465,000 long tons, and Mobile was exceeded in this by only New York, Baltimore, Philadelphia, New Orleans and Norfolk. The port exported 1,911,000 long tons in 1947, an increase of 57 percent over the preceding year, and imported 1,554,000 long tons, a jump of 22 percent over 1946. Overseas commerce handled in 1947 totalled over $130,000,000. More than $107,000,000 of this was in exports and over $23,000,000 in imports.

The following comparative figures show the rapid increase in Mobile's world trade which prompted the expansion programs:

Tonnage handled	1946	3,309,535
	1947	4,053,775
Freight cars handled	1946	90,723
	1947	103,006
Vessels docked	1946	761
	1947	928
Gross earnings	1946	$2,981,715
	1947	$3,663,021

Henry W. Sweet, Director of the Alabama State Docks and Terminals, has outlined a five-point program for achieving the role of top port in the nation's shipping through improved economy in the South:

1. Training of more men in agriculture and livestock.
2. Increased reforestation and scientific lumbering.
3. Greater mechanization in industry and agriculture.
4. Conservation of minerals.
5. Utilization of metals imported from Latin America.

After Twenty Years—a Celebration

On June 25-26 the Port of Mobile held one of the largest celebrations in its long history in observance of the Twentieth Anniversary of the State Docks.

Thousands of guests streamed into Mobile from throughout the port's trade area in the East, North, South and midwest. The purpose of the celebration was to call

(Continued on Page 40)

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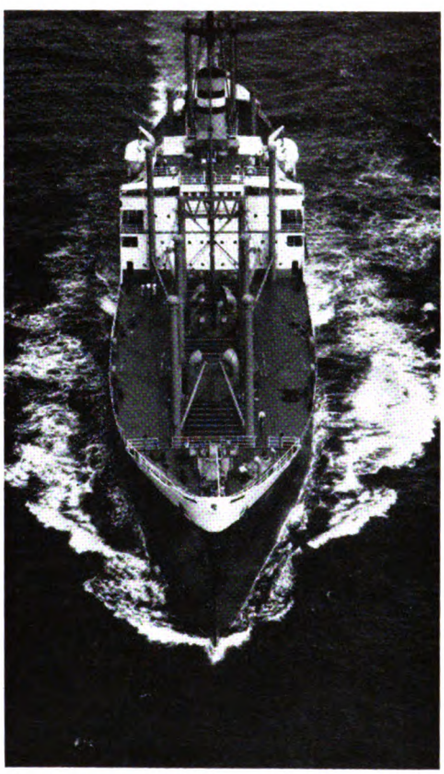
S.S. ALBLASSERDIJK, formerly the H.M.S. TRUMPETER, British aircraft carrier, was converted by the Gulf Shipbuilding Corporation of Mobile into the sleek C-3 shown in center cut, and delivered to the Holland-America Line for operation between Mobile and other Gulf Ports and Mexico, and London, Antwerp and Rotterdam. An interesting feature about the names of the Dutch ships is their code system—any ship's name beginning with the letter "A" means it was American-built. Freighters end in DIJK, as the ALBLASSERDIJK, and passenger liners always end in DAM, such as NIEW AMSTERDAM.



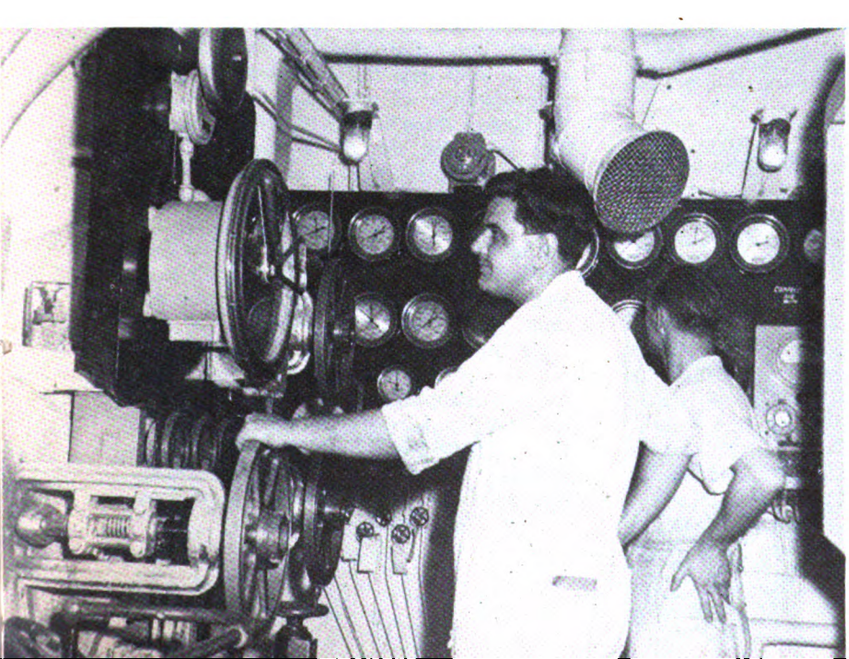
TRIAL TESTS were held May 19 off the Florida coast. The delivery of the ALBLASSERDIJK marked the fourth converted aircraft carrier Gulf Shipbuilding Corporation has delivered to Dutch interests, and the sixth to be completed. Six carriers remain at the Gulf Yards in various stages of conversion, scheduled to roll off the assembly line at the rate of one a month.

TRIAL

RUN

CRASH STOP COMING UP——These engineers of the ALBLASSERDIJK stand by for full astern to test its 8,500 horsepower steam turbine engine which is capable of maintaining a cruising speed of 17½ knots. The ship is 492 feet long, has a beam of 69½ feet with a draft of 29½ feet and a gross tonnage of 7,951 tons. The five holds have 726,340 bale cubic capacity.

SIGNED, SEALED AND DELIVERED—Delivery of the S.S. ALBLASSERDIJK was made as the vessel steamed toward Mobile Bay after successful sea trials. Acquisition of the new ship increases the Holland-American Line's fleet to 26 ships with a total gross tonnage of 243,180 tons, roughly 85% of its prewar strength. Cut below shows FREDERICK R. WIERDSMA, General Manager of the Holland-America Line for the United States and Canada accepting the vessel, witnessed by (left to right) HAROLD W. ROBERTS, Vice President, Texas Transport & Terminal Co., Inc., Gulf Agents for Holland-America; HARRY HILL, Vice President of Gulf Shipbuilding Corp.; and ALOIS TERKUHLE, Southern representative of Holland-America Line, New Orleans.



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NAVAL ARCHITECTS MEETING AT NEWPORT NEWS

A well planned and interesting annual Spring Meeting of The Society of Naval Architects and Marine Engineers was held May 27 and 28th at Old Point Comfort, Virginia, with the Newport News Shipbuilding and Dry Dock Co. as hosts.

Three papers were presented at the technical session held the first morning while the afternoon was devoted to an inspection tour of the Langley Memorial Aeronautical Laboratory at Langley Field, the oldest and largest of the three research centers operated by the National Advisory Committee for Aeronautics.

A dinner was held that evening with Homer L. Ferguson, chairman of the board of Newport News as toastmaster.

The second morning was given over to an inspection of the shop and dock facilities of Newport News, the company's modern hydraulic laboratory and the famed Mariner's Museum. Following a luncheon given for the visitors at the James River Country Club by the company, some took part in a golf tournament while others embarked on the tug *"Huntington"* for a tour of Hampton Roads.

The Papers

"Hydrodynamic Design of the 48-Inch Water Tunnel at the Pennsylvania State College," was the first paper. It was written by Donald Ross, Dr. J. M. Robertson and Dr. R. B. Power of the Ordnance Research Laboratory of the college. A brief abstract follows:

The world's largest water tunnel for use in the investigation and analysis of the operating characteristics of underwater devices is being developed by the Ordnance Research Laboratory of the Pennsylvania State College under contract with the Bureau of Ordnance of the United States Navy. Water tunnels are the hydraulic counterparts of the much publicized wind tunnels, enabling the design, modification, and improvement of propelled underwater devices, much as the wind tunnel does with airborne devices.

This water tunnel, which is to be used primarily in the experimental phases of a research program on torpedo propellers, will be a circulating tunnel 97 feet long and 31 feet high. The test or working section will have an inside diameter of 48 inches and will be 14 feet long, large enough to permit testing models more than eight inches in diameter and eight feet long. The tunnel will provide smooth streamline flow in which such models can be tested with a maximum velocity greater than 60 feet per second or 40 miles per hour. When flowing at this velocity, more than 750 cubic feet of water will pass through the working section per second, corresponding to more than one million of gallons of water every three minutes.

The water in the tunnel will be circulated by a 95-inch-diameter, four-blade variable-pitch impeller. Partial control of the water speed will be obtained by adjusting the pitch of the impeller blades, while complete control of water speed over a minimum usable range of 6 to 60 feet per second will be obtained by adjusting both the pitch angle and the rotating speed of the impeller. The impeller will be driven by a 1750 horsepower wound-rotor induction motor. A speed range of 70 to 175 revolutions per minute will be obtained by varying a liquid rheostat electrically connected to the wound rotor.

The second paper, "A Method for the Determination of a Ship's Stability at Sea," was read by Captain James E. Kierman, USN (ret.). The abstract follows:

The notes presented by the author were prepared from data gathered in the research work of the Damage Control Section of Stevens Institute of Technology in Hoboken, New Jersey. This activity is under the supervision of the Special Devices Center of the Office of Naval Research, Navy Department.

The method used is the result of experiments made with a 20-foot model of a large vessel. The object of these tests was to determine the stability of the model from measurements of its roll motion in irregular waves without knowledge of loading conditions. The method avails itself of the period of the roll of the vessel which is nearly always available and measurable, and which through the resultant of several factors also contains the natural period of the ship. The problem is to separate the natural period from the other components of the roll, which may be called the forcing elements. This may be accomplished by one of several methods or a combination of them. An experienced man may do it by picking out the "one good roll" and base his procedure on the knowledge that his judgment is correct. The author describes the use of a roll recorder and a recording roll analyzer, in determining the period of the roll.

Once the period under the given conditions has been determined, the operator proceeds to construct a new curve of stability from which he can determine the condition of the ship as far as stability is concerned.

In this connection, it may be noted that the method does not depend upon a knowledge of metacentric height, which many accept as a stability indicator. As a matter of fact, it becomes more accurate when the metacentric height is low, and the question of stability assumes prime importance to those in command. This method is effective even under conditions in which the metacentric height is negative and the ship is sluggish to the action of the sea.

Further work can be done to improve the method and render the results more certain, but it is believed that a way has been opened to determine the stability of a ship at sea in a reasonably rapid manner. Also it can be done by people who need not be experts, but who will need only a moderate knowledge of the principles involved and the ends they seek.

The third paper, "The Equipment and Methods Used in Operating the Newport News Hydraulic Laboratory," was presented by C. H. Hancock, supervisor of the laboratory. A brief abstract follows:

The Hydraulic Laboratory of the Newport News Shipbuilding and Dry Dock Company, Newport News, Virginia, has recently been enlarged to twice its former size to take care of additional testing facilities. The present laboratory contains, in addition to turbo-machinery test equipment, a ship model towing tank, a circulating water channel and numerous smaller pieces of equipment in various sections. These sections are: a stress analysis laboratory, a chemical laboratory, a photographic and reproduction section, a cavitation laboratory and an electrical measurements section. Auxiliary facilities to aid the experimental work are a small library, a drafting room and a service shop.

The techniques used in the ship model basin include those concerned with smooth or still water towing, towing in head seas and stern seas, launching tests, shallow water tests, restricted channel tests, and miscellaneous tests. The miscellaneous tests include such items as the investigation of the surge of the ships' swimming pools to pitching of the ship. The laboratory has developed its own methods of constructing and calibrating auxiliary equipment and instruments for use in ship model tests such as accelerometers, dynamometers, free-to-pitch towing attachments and light trace equipment. This ship model towing tank is only 56 feet long but has been useful for investigations of the design of some of the largest ships built in the United States. The lines for the *S. S. America* were developed in this tank as a result of nearly sixty model tests. Structural problems in the design of flight decks for the aircraft carriers, *Midway* and *Coral Sea,* built at Newport News, were also the subject of rough water towing tests in this tank.

He outlined several new testing techniques such as the electrolytic tank method of mapping flows, the Escher-Wyss air testing of hydraulic equipment, the low velocity wind tunnel method of investigating flow around submerged models and the water tunnel equipment

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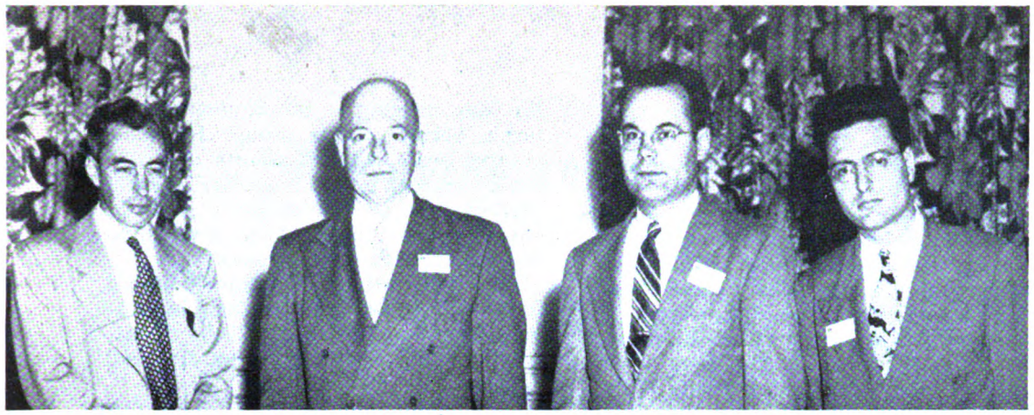

NAVAL ARCHITECTS

AUTHORS OF THE PAPERS presented before the annual Spring Meeting of The Society of Naval Architects & Marine Engineers, May 27-28, at Old Point Comfort, Virginia. Left to right, C. H. HANCOCK, Supervisor of the Hydraulic Laboratory, Newport News Shipbuilding & Dry Dock Co.; CAPT. JAMES E. KIERNAN, USN (ret.) Damage Control Research Group, Stevens Institute of Technology; DR. J. M. ROBERTSON and DONALD ROSS, Ordnance Research Laboratory, Pennsylvania State College.

ABOARD THE TUG "HUNTINGTON" with the Newport News yard in the background is this group including, HAROLD NORTHCUTT, Assistant General Manager, Bethlehem Steel Co., Shipbuilding Division, Staten Island Yard; Mr. and Mrs. O. B. WHITAKER (Mr. Whitaker is Federal and Marine Manager of the Sperry Gyroscope Co.); Mr. and Mrs. GEORGE KAY (Mr. Kay is Principal Surveyor, American Bureau of Shipping Baltimore); Mr. and Mrs. HOWARD LEAF (Mr. Leaf is engineer for the Pilot Marine Corp.); JOHN CLEMEN, Engineer, Seaboard Machinery Corp.; and HAROLD WICK, Assistant to the President, American Bureau of Shipping.

INSPECTING THE YARD FACILITIES of the Newport News Shipbuilding & Dry Dock Co.

HOMER L. FERGUSON, (standing) Chairman of the Board, Newport News Shipbuilding & Dry Dock Co., was toastmaster for the Naval Architects' dinner.

From left to right: W. JOHN KENNEY, Undersecretary, Department of the Navy; HOMER L. FERGUSON; COLONEL W. W. MOORE, Chief, Maintenance & Repair Branch, Water Transport Service Division, Office Chief of Transportation, Department of the Army; GENERAL J. L. DEVERS, Chief, Army Field Forces; and ADMIRAL EARLE W. MILLS, Chief Bureau of Ships, Navy Department.

MARINE ENGINEERS

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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

San Francisco

John F. Kooistra, San Francisco, Carrier Corporation, will talk on marine refrigeration at the July meeting of The Society of Port Engineers, San Francisco, on July 7th.

For the August meeting, Arthur Ward, president of the International Paint Company, New York, will come to the west coast to discuss bottom paints. Mr. Ward was in Europe in June.

V. A. Rumble, San Francisco, Bailey Meter Company, was the speaker at the June meeting, discussing operation and care of boiler control systems and illustrating his talk with slides. He was assisted by P. M. Harris, the Bailey Meter marine representative at San Francisco.

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Naval Architects

(Continued from Page 28)

which has been gaining prominence in the recent technical literature. An extensive annotated bibliography accompanied the paper as a guide for those who wish to pursue the subject matter of the paper in greater detail.

Colonel Moore Speaks

The president of the Society, Vice Admiral Edward L. Cochrane, USN (ret.) presided over the dinner May 27th which was attended by some 350 guests. Toastmaster Homer L. Ferguson, chairman of the board of the Newport News Shipbuilding and Dry Dock Co., introduced the speakers, Colonel W. W. Moore, Chief, Maintenance and Repair Branch, Water Transport Service Division, Office Chief of Transportation; and Colgate W. Darden, Jr., president of the University of Virginia, former governor and Representative in Congress for three terms.

Colonel Moore spoke on "Army Transports in Relation to Our Merchant Marine," saying in part:

"While the Department of the Army expects to maintain a small fleet of vessels for specialized services incident to the support of forces which will be manning the outlying bases of the Army, it is the present policy to utilize the merchant fleet of the United States to a marked extent for transporting Army cargoes. Present Army plans call for the transport of 75 percent of such cargo in commercial vessels. This policy was established to assist in fostering a healthy merchant fleet under our flag that will be capable of rapid expansion required in the event of another war."

Colonel Moore stated that approximately 247 vessels will be required to supply occupation forces in Germany and Japan and after withdrawal of forces from those areas some 153 vessels will still be required. At present the Army is purchasing private shipping services to between 200 and 250 million dollars annually.

President Darden's Comments

President of the University of Virginia, Colgate W. Darden, remarked that thirty years of history has shown that the only thing that will save the United States is the power to stand alone.

"You cannot synthesize and compromise the difference between tyranny and democracy," he said, "the strongest will survive. They who dream of world empire—of world conquest, will strike when they think success is possible.

"Communism will ultimately be beaten in the hearts and minds of men"

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So. California Naval Architects

Frederick W. Stearns, consulting engineer and associate member of the Society of Naval Architects and Marine Engineers, was the principal speaker at the May meeting of the Southern California Section of the group. His topic covered some modern aspects of welding. According to Chairman Karl French, Stearns may develop an entire series of papers on this subject, such material to be made available to members.

The June meeting tentatively called for an address on ship propulsion by William Lambie. Meetings will be terminated for the vacation period of July and August.

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Test Basin Committee Reports To NW Naval Architects

Meeting at Seattle in May for their regular quarterly meeting the Pacific Northwest Section of the Society of Naval Architects and Marine Engineers installed officers for 1948-49 and then became so absorbed in the committee report on hydraulic and model testing basin at the University of Washington that other business on the agenda was put aside for discussion at a special meeting in June.

Named as one major goal to be attained when the Section was organized in 1946, work on the testing basin proposal was started some months ago by formation of the University of Washington Hydraulic and Model Testing Basin Committee, headed By H. C. Hanson, Seattle naval architect.

Early action of the committee was to consult with Professors B. T. McMinn and T. M. Rowlands of the University. A decision was reached that a full report go to the president of the university to acquaint him, the board of regents and others with facts concerning the need for the operation of and the construction of such a basin in the area.

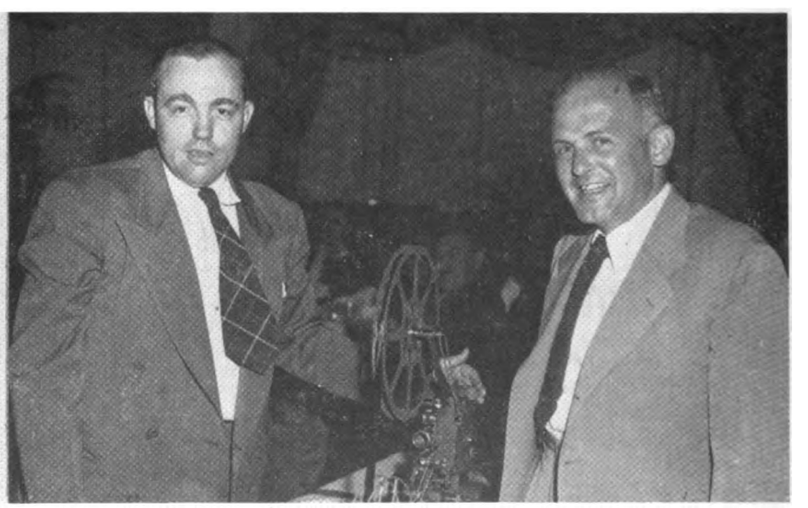
With this in mind chairman Hanson devoted a great deal of time traveling East seeking information from the Admiral Taylor Basin at Carderock, Maryland, the old Naval Basin in Washington, D.C.; Stephens Institute Basins at Hoboken, N. J. The basin at Ann Arbor, Mich., had been previously visited.

(Continued on Page 32)

NEW YORK PORT ENGINEERS . . . JAMES B. YOUNG, right, Vice President, Barber Steamship Lines, New York, guest speaker at the May 19th dinner meeting of the Society of Marine Port Engineers New York, N. Y., Inc., with F. W. GAINES, Vice President of the Society, who presided.

Mr. Young, who recently returned from a round-the-world trip, gave the members of the Society his off-the-record impressions of conditions and business prospects in the Far East.

SOCIETY OF PORT ENGINEERS, LOS ANGELES—Host at the June dinner meeting was Craig Shipbuilding Co., Long Beach. Representatives of the company, JOE DENNIS, left, and JOHN MARRINER, right, exhibited a color-sound film, "Salvage of the ms. DIAMOND KNOT."



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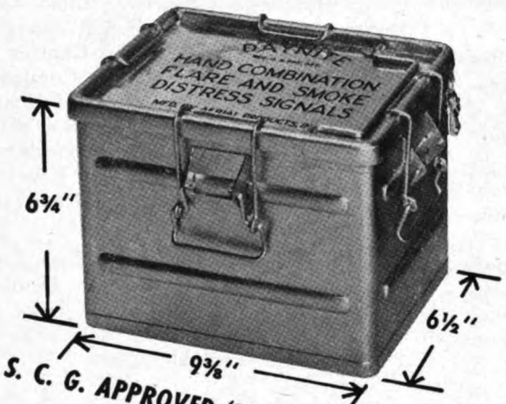
Equipping to Meet New Coast Guard Regulations?

EFFECTIVE JAN. 1, 1949



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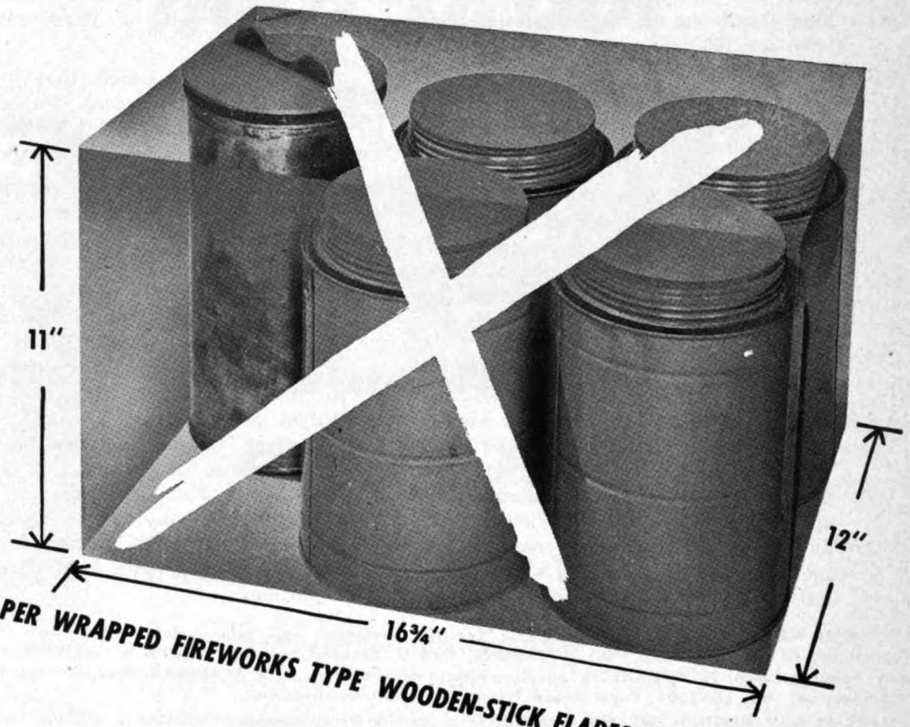

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N.W. Naval Architects

(Continued from Page 30)

Information obtained on the trip is embodied in a letter addressed to the University of Washington president. "It was recommended that a power model testing basin be built approximately 400 feet long, that being arrived at through allowance for 100 feet for acceleration of the carriage, 200 feet for the test and 100 feet for deceleration, that the basin itself be approximately 30 feet wide, that it be 16 feet deep of a U-shaped cross section, that splash boards or wells be fitted at ends of basin, that a heated basin would be desirable, and that a two-rail carriage be used, that the carriage should be well designed and as light as possible and still do the work, that carriage speed of 12 knots would be desirable," Mr. Hanson said.

"The closest approach to the basin recommended was the old Naval Basin at Washington, this being 400 feet long and 40 feet wide, which has a vee shaped bottom section with straight sides, but the carriage is far heavier than that desired. The University of Michigan basin at Ann Arbor was next closest being 300 feet long and 22 feet wide with a rectangular cross section, with false bottom work fitted, the carriage speed of basin here was much like that recommended, except that it should be lighter and more modern.

"The latter school operates a fine school of Naval Architecture in connection with their basin, and this is one of the aims of the University of Washington report submitted.

"It is recommended that a machine shop be built if present University shop could not be used in this work. Estimate of $500,000 was given as cost of basin."

Mr. Hanson was highly praised for the unselfish interest evidenced, and the committee was empowered to enlist aid of prospective users to speed the project to fruition.

1948-1949 officers of the Pacific Northwest Section are: William H. Watkins, Puget Sound Naval Yard, chairman; H. C. Hanson, vice-chairman; H. E. Lovejoy, Puget Sound Freight Lines, secretary-treasurer. Executive committee members are: George C. Nickum, W. C. Nickum and Sons; Fred G. Greaves, Fred G. Greaves Company; J. M. Dyer, Astoria Marine Construction Company; and G. J. Ackerman, American Mail Line, retiring chairman.

NORTHWEST NAVAL ARCHITECTS . . . Top row, Executive committee goes into session: left to right: GEORGE C. NICKUM, W. C. Nickum & Sons; FRED G. GREAVES, Fred G. Greaves Company; WILLIAM H. WATKINS, Puget Sound Navy Yard, chairman; H. C. HANSON, naval architect, vice-chairman; G. J. ACKERMAN, American Mail Lines, 1947-1948 chairman. H.E. LOVEJOY, Puget Sound Freight Lines, secretary-treasurer.

PRESENT AT MAY MEETING: WILLIAM P. WOOD, Foss Launch & Tug Company; THOMAS K. MURPHY, Murphy Sales and Service Company; B. A. WILSON, Nordberg Manufacturing Company.

Center row, left to right: ARTHUR E. FARR, Todd Shipyards Corporation, Inc., PHILIP SPAULDING, Todd Shipyards Corporation; Lieutenant Commander D. L. CREED, Puget Sound Naval Shipyard; COMMANDER E. A. EVE, U.S. Coast Guard; A. GORDON MAY, May and Smith, Inc.; R. G. KENNARD, Markey Machinery Company; ANDREAS FASTE, W. C. Nickum and Sons; S. D. VANEK, Pacific Car and Foundry Company; RALPH TURNER, H. C. Hanson, naval architects.

Bottom row, left to right: TOM SANDRY, Fentron Steel Works; F. G. RATHVON, naval architect; HENRY KIRSCHNER, Pacific Car and Foundry Company; J. W. McGUIREand LEWIS S. DIAL, M. & R. Division, S. P. O. E.; LIEUTENANT COMMANDER J. C. SMITH, LIEUTENANT COMMANDER R. RILEY, Puget Sound Naval Shipyard; S. K. SMITH, American Bureau of Shipping; LIEUTENANT COMMANDER W. GUNLACH, Puget Sound Naval Shipyard.

Diesel Night For No. Calif. Naval Architects

It was Diesel engine night at the June meeting of the Northern California Section of The Society of Naval Architects and Marine Engineers when Roy A. Hundley, chief engineer of the Enterprise Engine and Foundry Company made the principal talk and was followed by representatives of other Diesel manufacturers.

Mr. Hundley's paper was titled "The Designer Had a Reason For It" and the discussion included talks by Charles G. Cox, Nordberg Manufacturing Company; Sidney W. Newell, Union Diesel Engine Company; Harry Nagel, Fairbanks, Morse & Company; V. J. Bahorich, superintendent engineer, Pacific Far East Line; Ed Senter, marine superintendent Grace Line, and others.

The next meeting of the northern California group will be held in October. There is talk of a joint dinner dance for the Christmas season to be held with the San Francisco Propeller Club.

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W. C. Hubbard To Head Northwest Port Stewards

W. C. Hubbard, port steward, Alaska Steamship Company, has been elected 1948-1949 president of the Port Stewards Association of the Northwest. Other elected officers are Thomas Craig, port steward, Northland Transportation Company, vice-president; and William D. Klontz, port steward, American Mail Line, secretary-treasurer.

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Port Stewards' Plan Annual Golf Tournament

Arrangements are being made for the third annual golf tournament and banquet to be held by the Port Stewards' Association of the Pacific Coast, San Francisco, August 19 at the Green Hills Country Club at Milbrae, Calif.

General chairman of the committee in charge is Frank B. Ingham, United States Lines, who has appointed assistants as follows: Tickets: Paul Babcock and Paul Baker, Pacific Transport Lines; Prizes: Johnny Nelson, Moore-McCormack Lines and Harry Christenson, American-Hawaiian Steamship Company; Table arrangements: T. J. Taylor, Pacific Far East Line and L. H. Beckendorf, W. R. Chamberlin & Company; Golf tournament: Cornelius Crimmins, American President Lines, and Entertainment: Claude Martin, Shepard Steamship Company.

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The Northwest Rivers and Harbors Congress, with members consisting of business leaders and port authorities of Oregon and Washington, meets at Everett, Washington in August for the 23rd annual session. H. J. Solie, Everett, is president; Harry J. Appling, secretary-manager, Port of Everett Commission, is secretary-treasurer.

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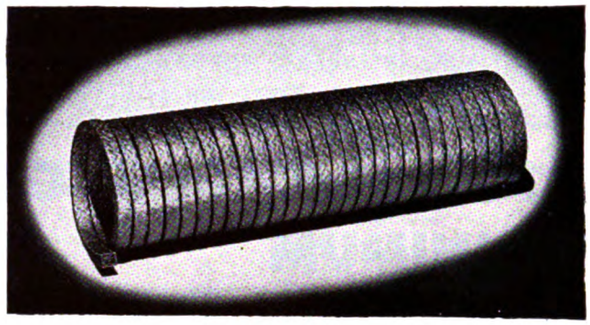

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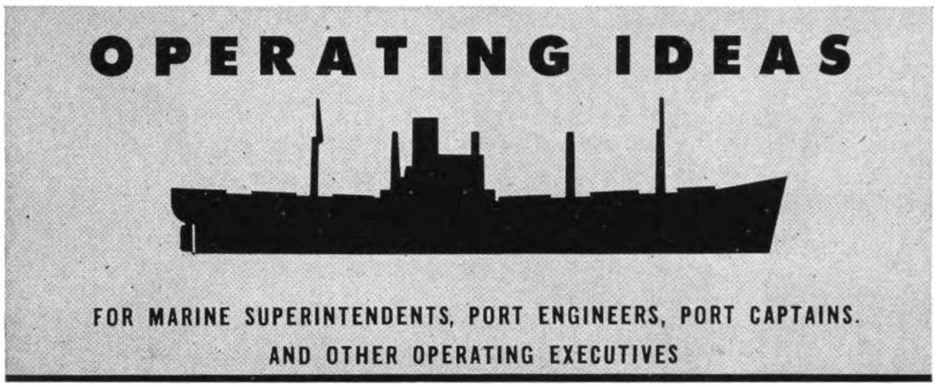


HOW TO KEEP FUELING TIME TO A MINIMUM

By ROBERT P. GIBLON
Marine Engineer
George G. Sharp

The fueling of a modern cargo vessel has been found to be a much more difficult task than fueling vessels of older design. This is primarily due to the increased number of fuel oil tanks, particularly long shallow double bottom tanks that are installed on the more modern vessel versus the use of a few deep tanks. Due to the large number of fuel tanks it has been necessary to install comparatively more complicated fuel oil piping systems since more tanks means more filling lines, larger distribution manifolds and in general more piping. For example, on most U. S. Maritime Commission "C" type cargo vessels approximately ten double bottom tanks and two or more deep tanks are fitted, while on the U. S. Maritime Commission Victory type cargo vessels thirteen double bottom tanks and six deep tanks are fitted, not counting in each case the settling tanks. In both of these designs the number of tanks is more than used formerly.

New Piping System

For this greatly increased number of tanks, a piping system different from that formerly employed has been developed. It uses a protective device common to all tanks to guard against excessive pressure in any one tank. This system is used to avoid an extensive piping arrangement which would result from fitting an overflow at each tank, such as installed when relatively few tanks are involved. This protective device consists of a vertical pipe loop or standpipe which discharges to the settling tanks. The top of the loop is installed at such a height that the pressure in any fuel oil tank cannot exceed the design pressure. The top is also vented, so that the loop will not act as a syphon if filled. This standpipe acts as a relief valve, since whenever the pressure at its base exceeds the pressure equivalent to its height, the fuel oil will overflow through the standpipe to the settling tanks. The installation of the standpipe has one serious drawback however, since it limits the fuel oil filling pressure available to force the oil into the fuel oil tanks and thus limits the rate of filling the vessel.

When fueling the ship the object is to maintain at all times the highest possible head in the oil overflow standpipe (without overflowing to the settling tanks) so as to provide the greatest head for forcing oil into the tanks. For determining this height a pressure gauge is sometimes fitted near the base of the standpipe. This gauge is usually fitted with a fixed red hand that indicates the pressure equivalent to a head of oil one or two feet below the top of the overflow. Some vessels are fitted with a level gauge so that the height of the oil in the standpipe can be determined.

When the level in the standpipe is too high it indicates that the rate of fueling is too great and the operator should throttle the valve in the filling line or in some other way reduce the fueling rate and thus avoid overflowing oil to the settling tanks. If the level is three or four feet from the top of the overflow this indicates that the maximum head is not being utilized and that the throttling valve may be opened wider or other adjustments should be made so as to increase the fueling rate and, consequently, decrease the fueling time. A simplified diagram of the fuel oil filling system is shown by Figure 1.

Check Level of Tanks

When fueling, the level in the tanks should be checked periodically by sounding and by the use of the tank level indicator when filled. The general practice is to fill the tanks to about 97 per cent of capacity which allows the oil to expand, when heated, without rising in the vent pipes.

The settling tanks should be the last tanks to be filled. Sufficient volume should be left in these tanks to permit the remaining oil in the filling line from the ship's side to flow into the settling tanks without discharging oil overboard through the settling tank overflow line, and to permit topping off the various tanks in which the oil levels are up in the tank vent lines.

Contrary to the general belief, it is not good practice to arrange for filling all tanks at the start, and it will be found preferable to reserve the tanks that are easy to fill until later The reason for this can be appreciated when it is understood that the total filling time equals the time to fill the most difficult tanks. If all valves were opened in the beginning it might not be possible to maintain a full standpipe due to the limited capacity of the pump supplying oil to the ship. The decreased head in the standpipe would result in a slower filling rate to the tanks difficult to fill and this loss in time can in no way be made up.

Standpipe Pressure High

In filling, a general rule to follow would be to strive to keep the standpipe pressure as high as possible without overflowing to the settling tanks while taking oil at the maximum rate possible. The oil flow to one or two of the tanks easy to fill should be cut off or opened up as necessary so that the desired head is maintained. Never fill more than two tanks that are easy to fill at any one time and

Figure 1.

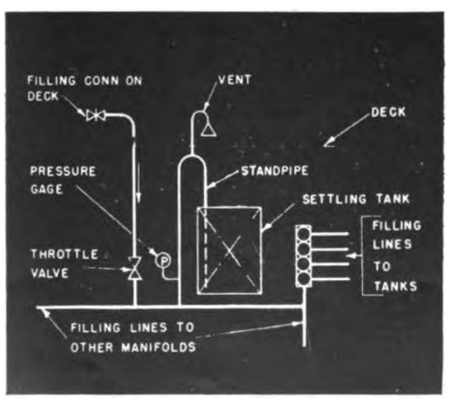


Figure 2.

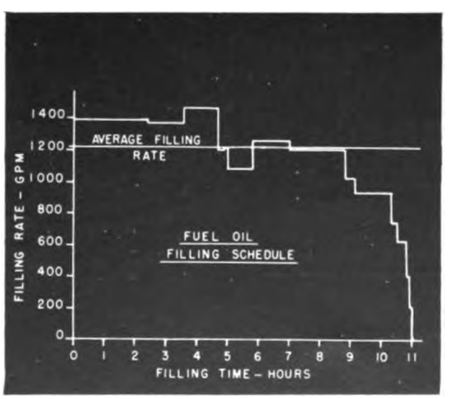
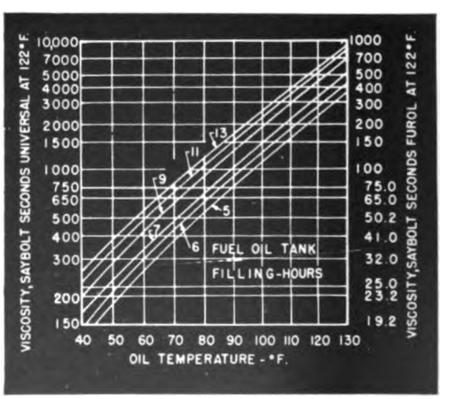


Figure 3.



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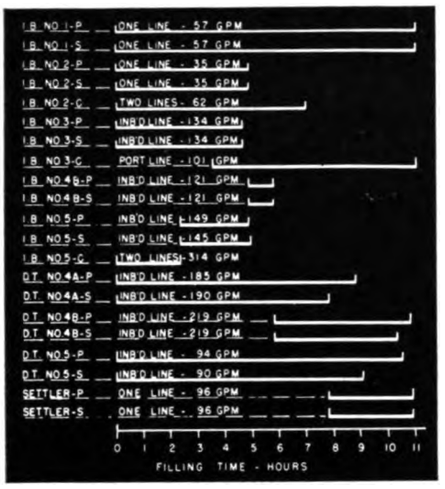

Figure 4.

then only use one filling line to the particular tank. If the fuel rate is too high then the oil passing through the filling main should be throttled or the rate of pumping from shore or barge should be reduced. Always use all filling lines to those tanks that are difficult to fill.

In addition to obtaining the maximum possible head at the base of the standpipe it is also desirable to have the maximum possible head available at the fuel oil manifold. This can be obtained by filling through both the suction and discharge mains where the piping arrangement will permit. Also the oil should be distributed to all manifolds at the same time (not all tanks at the same time) so as to keep the pressure drop to any one manifold at a minimum and thus obtain a maximum constant head at a particular manifold.

To aid in fueling, all oil remaining on the vessel should be transferred previous to the start of the filling operation to those tanks that are difficult to fill. The settling tanks should also be pumped down to the minimum quantity of oil required for boiler consumption during the fueling period. The oil pumped from the settlers will also aid in filling those tanks that are difficult to fill, as well as provide a storage space for any oil that may inadvertently overflow via the standpipe.

Filling Lines Blown With Steam

Previous to filling, and where the system will permit, all filling lines should be blown out with steam. This is particularly important in cold weather since it will avoid initial chilling of the oil and thereby speed up the filling time.

If the settling tanks should become nearly full due to oil accidently being allowed to overflow through the standpipe, the settling tanks must be pumped down to avoid overflowing them to the sea. This can usually be accomplished by closing off the suction main from the filling main and tanks and taking suction from the settling tank via a transfer pump and discharging through the discharge main to the fuel storage tanks. During this operation the fueling rate will have to be reduced but not stopped altogether.

To illustrate the foregoing, the filling diagrams, Figures 2 and 3 are included; and they illustrate the rate and one method of filling a U. S. Maritime Commission Victory type cargo vessel. The diagrams are based on filling via either deck connection using both the fuel oil filling and suction mains, using 6000 SSU Bunker "C" oil, maintaining the maximum head in the standpipe, keeping the total flow as steady as possible, filling corresponding port and starboard tanks simultaneously, and filling the settling tanks last. Flows to the individual tanks were calculated by solving for that flow which would give a pressure drop between the standpipe base and the end of the pipe equivalent to the known available head, which was corrected for average trim of the ship. The actual pipe length, fittings, bends and manifold valves were considered in determining the pressure drop.

The schedule is shown to indicate one method that may be used when filling with 6000 SSU Bunker "C" oil. From this schedule it will be noted that No. 1 port and starboard innerbottom tanks and Nos. 4A and 5 deep tanks are hardest to fill, and should be arranged to be filled from the start of the filling operation. It will also be noted that not all tanks should be arranged for filling at the start since the fueling rate required would exceed the usual capacity of the oil barge pumps, which seldom exceed 2000 barrels per hour or 1400 gallons per minute.

When the grade of oil and/or the temperature varies from that upon which the fueling schedules, Figures 2 and 3, were based, the fueling time may be approximated by using the accompanying chart, Figure 4, which plots filling time against viscosity at 122 deg. F for the particular grade of oil being furnished. At this viscosity enter the chart horizontally until it intersects the vertical line corresponding to the pumping temperature. At the point of intersection read the number of hours required for filling, interpolating if necessary. If a certain filling time is desired, proceed horizontally from the given viscosity until intersecting the proper filling time diagonal and then, coming down vertically, read the required pumping temperature. From the chart one will note that the higher the temperature of the oil as well as the lower viscosity, the shorter will be the filling time.

* * *

HOW TO FIGURE STRESSES IN CARGO HANDLING GEAR

By DANIEL T. MALLET

Naval Architect

George G. Sharp

A general knowledge of the basic principles which enter into the design of masts, kingposts, booms, rigging, fittings, etc., should enable the man who is responsible for the operation of this equipment to perform his work with greater confidence, safety and efficiency.

The aim of this article is to touch briefly on some of the major considerations taken into account when calculating stresses in cargo handling equipment, and to illustrate the manner in which the ship operator can make practical use of this knowledge.

Masts and Kingposts With Light Loads

We will start with a discussion of a mast which carries a 5-ton boom as shown in Fig. 1. It will be noted that this mast is not supported by standing rigging, which results in a heavier mast section than would otherwise be the case. It has been the custom in recent years to design masts and kingposts in this manner to avoid setting up standing rigging when handling light loads as well as to permit greater freedom of the booms' swing.

The maximum bending moment occurs at the level of the boom step. Its value

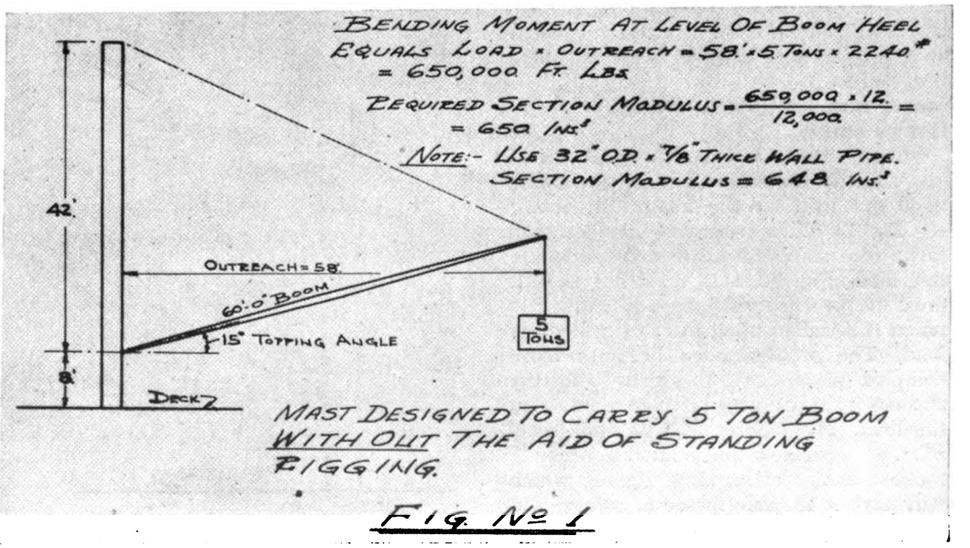

FIG Nº 1

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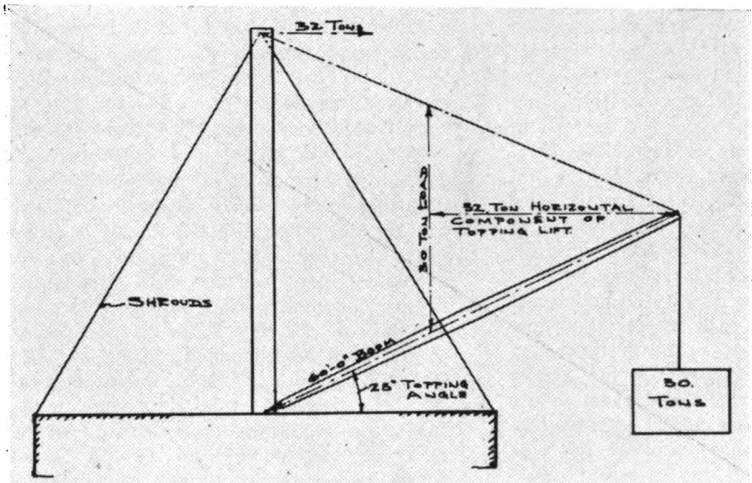

Same Mast As Shown In Fig. No. 1 Carrying 30 Tons With The Aid Of Standing Rigging

Fig. No. 2

is equal to the load carried by the boom, multiplied by the horizontal distance from the load to the mast. In our case the maximum bending moment is equal to 58 feet x 5 tons x 2240 pounds = 650,000 foot pounds. The required section modulus, to safely withstand this bending moment, is equal to the bending moment in inch pounds divided by the safe working stress, in pounds per square inch, =

$$\frac{650{,}000 \times 12}{12{,}000} = 650 \text{ inches cubed.}$$

A steel pipe section 32 inches in outside diameter by 7/8" thick has a section modulus of 648.1 which is sufficiently close to the required value. In actual practice the mast section would be tapered towards the top in accordance with the decrease in bending moment, but this is a refinement which does not concern us here.

Perhaps the most important thing to be learned from Fig. 1 is that the bending moment in a mast or kingpost increases directly with the outreach of the boom for a given load. Thus a mast or kingpost is in greater danger of breaking when the boom is at a small topping angle (nearly horizontal) than it is when the boom is well topped up. With this in mind, the wise ship operator will attempt to avoid excessively low topping angles, and will decrease the load on his boom should it be necessary to use a low topping angle.

Masts and Kingposts With Heavy Loads

We will next consider the problem of our mast when it is rigged up to handle a 30 ton load on the heavy lift boom; see Fig. 2. Since this mast was designed to be free standing when supporting a 5 ton load, Fig. 1, it is apparent that it must be braced with shrouds and stays when it is called upon to carry a heavier load. The problem now becomes more complex since both the mast and the shrouds or stays play a part in supporting the load. The part carried by each mast must be accurately determined in order to make a choice of standing rigging which will have a suitable factor of safety, and at the same time keep the bending stresses in the mast down to proper limits.

The approach to this problem is to consider the horizontal movement, or deflection, of the mast head due to the pull of the topping lift. Having made an approximate choice of standing rigging, based on past experience, it is possible to calculate the horizontal deflection of the mast head due to the 30 ton load. From this deflection the resulting stresses in mast and rigging can be determined, and a second choice of standing rigging made, should the first prove to be unsatisfactory.

From the diagram of forces shown in Fig. 2, it is seen that the topping lift exerts a horizontal force of 32 tons on the mast head. The solution of the stresses when four 1¾" diameter shrouds are used port and starboard works out to 11,300 lbs. per square inch bending stress in the mast, while the pull on each shroud is 30,200 pounds. From these results it will be seen that the mast has a safety factor of 5.3 based on 60,000 pounds per sq. in. breaking strength of mild steel, whereas the shrouds have a factor of safety of 8.2, based on a breaking strength of 248,000 lbs.

It would appear that the shrouds are over size, since a safety factor of five (5) is considered good practice. However if the calculations were worked out on the basis of lighter or fewer shrouds it would be found that the mast head deflects further, which would increase the mast bending stress beyond the safe limiting value. Or to state the problem another way, if the shrouds are reduced in either size or number, then the mast must carry too large a portion of the total load.*

*A copy of the stress calculations may be obtained upon request.

An interesting aspect of this type of problem can be illustrated by using a mast of smaller section. For example, assume that the mast has been reduced in section to 24" outside diameter by 1" thick wall and also that the shrouds have been reduced in number from four to three. Following these calculations through to their conclusion it will be found that the bending stress in the mast is near the safe limiting value of 12,000 pounds per square inch, and that the factor of safety of the shrouds is in excess of the minimum allowable value of five.

Briefly, we have a mast of smaller and lighter section, supported by less shrouds, yet which is capable of carrying the same 30 ton load as the heavier mast. At first glance it would appear that there must be an error in our calculations. However this is not the case. The smaller mast section results in a more flexible spar which is capable of bending further, before reaching its limiting bending stress. The resulting increased deflections of the

(Continued on Page 38)

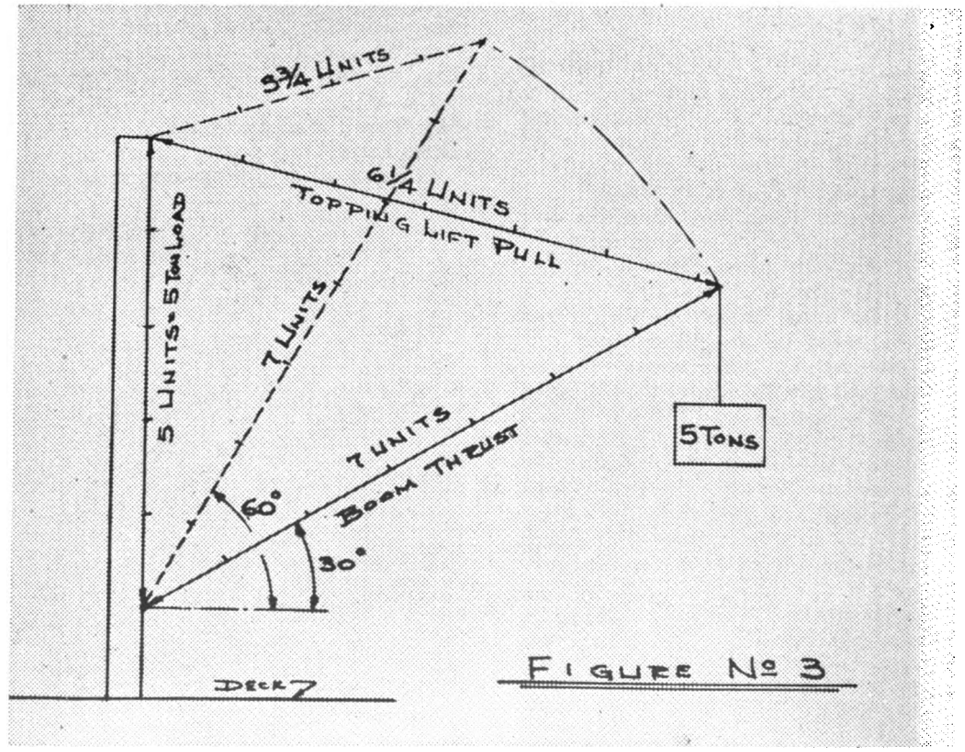

Figure No. 3

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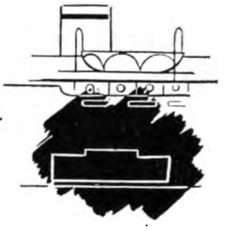

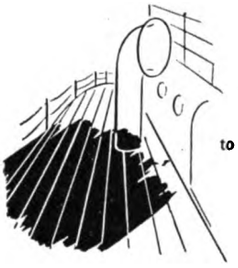

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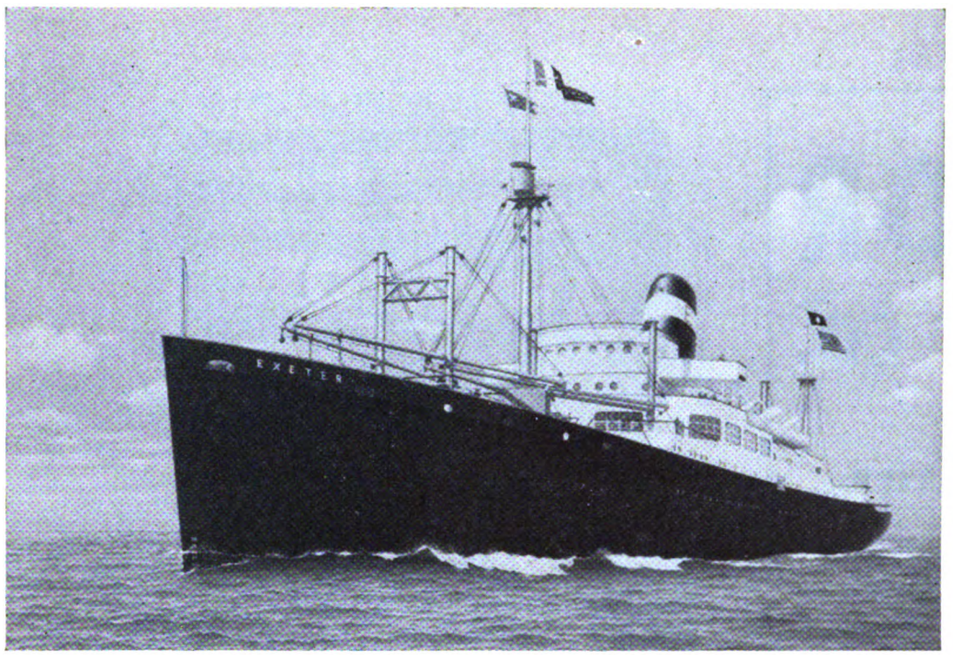

ONE OF FOUR . . . new one-class passenger liners that American Export Lines will operate starting this fall. This is artists view of one of the "4 Aces."

American Export Lines Acquire New "4 Ace" Passenger Liners

Four new "4 Ace" one-class passenger liners will be ready this fall for the American Export Lines. The liners called EXCALIBUR, EXOCHORDA, EXETER and EXCAMBION are being outfitted at the Bethlehem Shipbuilding Company's New York yards for New York-Mediterranean service.

This new acquisition by the company will enable them to restore American flag passenger service to the Mediterranean, interrupted since the war. The prewar "4 Aces" were converted into attack transports by the Navy and three of them were lost; the fourth survived unfit for further passenger use.

Each ship is equipped to carry 125 passengers and designed to afford maximum comfort, convenience and pleasure. Staterooms laid out on three of the four passenger decks are all outside facing the sea. After daytime occupancy the sofas are quickly convertible into oversized beds.

Among the features of the vessels are the new berths designed and constructed by Hopeman Brothers; air conditioning throughout with individual thermostats to control the flow of air to suit the occupant. Veranda decks surrounded by four staterooms provide privacy for groups traveling together.

The main lounge, forward on the Promenade Deck is planned for shipboard social activities. The dining rooms extend the full width of each vessel and are able to accommodate all passengers at one sitting.

The "4 Aces" are 473 ft. in length, 66 ft. molded breadth and 27 ft. 6 inches designed draft. They are single screw turbine driven with 8,000 horsepower installed and designed to operate at 17 knots. They increase to 24 the number of modern, express liners owned by American Export Lines.

⚓ ⚓ ⚓

(Continued from Page 36)

mast head causes the standing rigging to absorb a larger proportion of the total horizontal load acting at the mast head.

The reader may well ask why the more economical mast and rig should not be used. It would be the proper choice if the only problem were to design the mast for a 30 ton load. However since our mast must also be capable of carrying a 5 ton load, free standing, (Fig. 1) the smaller size mast section must be ruled out. The section modulus of the smaller mast section is 400, which when applied to the 5 ton boom condition shown in Fig. 1, would result in a bending stress of 19,500 pounds per square inch. This is far in excess of the allowable 12,000 pound unit stress.

The above discussion brings out the fact that a mast designed to be free standing for light loads must be more heavily stayed for heavy lifts than would otherwise be the case.

The man in charge should bear this in mind and take special pains to set up taut *all* of the standing rigging provided, rather than to be deceived by the robust appearance of the mast and be tempted to save time and set up only a portion of the rig when handling heavy lifts. The prize fight saying that "the bigger they are, the harder they fall" applies nicely to the mast designed to be free standing with light loads.

Cargo Booms

When discussing the design of masts and standing rigging, (as shown in Figs. 1 and 2), it was pointed out that the topping angle of the boom had a direct effect upon the resulting loads carried by the mast, shrouds and stays.

Curiously enough the thrust carried by the boom remains nearly the same for all topping angles for a given load. The reason for this is illustrated in Fig. 3. The triangle formed by the boom, mast and topping lift can be made to serve as a diagram of forces. The distance between the boom heel and the mast head represents the 5 ton load. By dividing this distance into 5 equal parts, the boom thrust and topping lift pull can readily be measured in terms of the same units.

Fig. 3 shows the boom topped at 30° and at 60° with the horizontal. It will be noted that the boom thrust remains 7 units in both cases since the boom and mast lengths remain unchanged. However, the topping lift pull varies in accordance with the distance between boom head and mast head. These results are typical throughout the entire range to boom topping angles, and it will be noted that the topping lift pull decreases as the topping angle increases.

In spite of the fact that the boom thrust remains essentially constant at all topping angles, it is good practice to avoid excessively low topping angles. The reason for this is that when the boom is nearly horizontal it tends to sag due to its own weight. The sag thus produced increases the danger of the boom buckling from the compressive load imposed upon it. When the boom is topped up at a relatively high angle the tendency for it to sag under its own weight is minimized and consequently the risk of buckling is greatly reduced.

Thus it will be seen that the danger of both the mast and the boom failing under a given load increases when the boom topping angle is decreased.

Cargo handling equipment is normally designed to allow for the increased stresses resulting from low topping angles. For example the U. S. Maritime Commission, in their standard "C" type ships, specified that light capacity booms and gear, such as 5 tonners, be designed for a 15° topping angle, and that heavy lift booms and gear be designed for 25°. However this does not change the fact that the boom, mast and associated gear is subjected to greater loading at low topping angles than when the boom is topped up high. The man in charge will be wise to act accordingly, and avoid excessively low topping angles.

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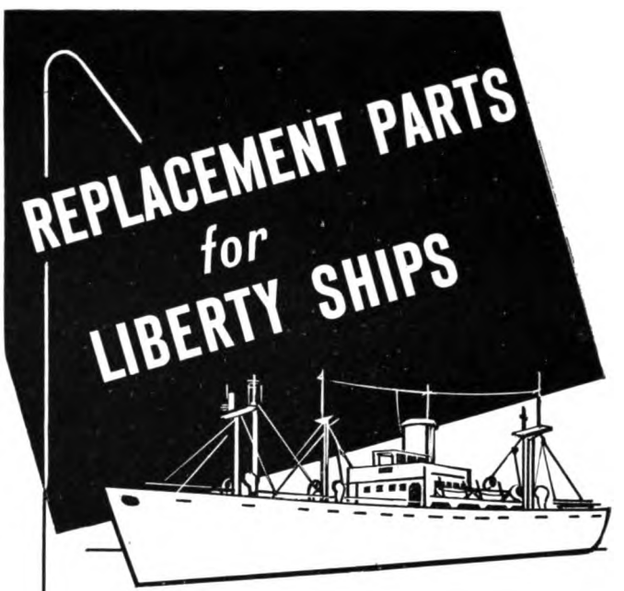

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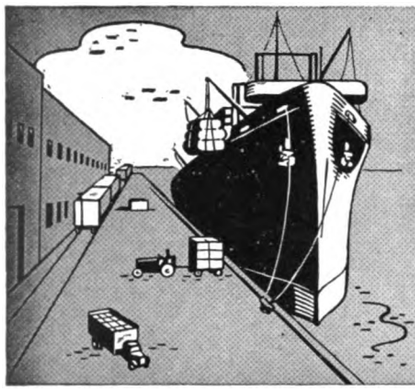

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Alex D. Stewart, Editor

Increased Cargo Charges Threat to Pacific Ports

Albert W. Gatov, president of the Pacific American Steamship Association, in a recent statement calling attention to re-opened hearings before the State Public Utilities Commission starting June 2 in San Francisco, charged that unrealistic increases sought by marine terminals in charges against cargoes moving across Bay Area docks constitute a threat to West Coast port communities, shippers, carriers and even to the terminals who are seeking them.

Terminals seeking the increases are members of the Marine Terminals Association made up principally of Howard Terminals in Oakland, Encinal Terminals in Alameda and Parr Terminals in Richmond.

"We must again ask," Gatov said, "that this effort toward unrealistic rate increases be viewed against the background of the almost non-existent competitive advantage of West Coast ports over the Gulf and Atlantic and the thin margin of cost advantage in shipping by water as against rail. Granting rate increases without considering their overall effect on shipping will harm our port communities, shippers, carriers and the terminals themselves by further diminishing cargoes moving through West Coast ports."

Wharfage for moving cargoes across terminal docks was increased 40 percent on March 24, 1947 and service charges for receiving and delivering cargoes for the carrier were increased 30 percent. In December 1947 and again in January 1948, additional increases were sought which would total 80 percent for wharfage and 46 percent for service charges since early that year. Following the last hearings in January of this year, the California State Public Utilities Commission denied the increases, leaving the rates as they were following the March 1947 increase.

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Port Authorities' Conference To Be Held In San Francisco

Thirty fifth annual conference of the Pacific Coast Association of Port Authorities will be held July 15, 16 and 17 at the Fairmont Hotel, San Francisco. President is Thomas Coakley of the California State Board of Harbor Commissioners, vice presidents are K. J. Burns, Vancouver, B. C., and J. A. Earley, Seattle, and secretary-treasurer is Carl M. Smith, San Francisco.

Five panel discussions are planned, on these subjects: "Coastwise and Intercoastal Trade in the Pacific Coast Area," "Promotion of all Classes of Waterborne Commerce in the Pacific Coast Area," "Reduction in Terminal Operating Costs Through Design and Plan of Facilities," "Fender Line Construction and Maintenance and Airport Development," and "Coordination of the Armed Forces with Port Authorities on War and Peace."

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Re-elect Pilot Commissioners For Port of New York

Captain Phineas B. Blanchard, president of Turner & Blanchard, Inc.; Alfred V. S. Olcott, president of Hudson River Day Line and Winchester Noyes, president of J. H. Winchester & Co., have been re-elected Commissioners of Pilots for the Port of New York by the Chamber of Commerce of the State of New York.

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Port of Mobile

(Continued from Page 26)

to the attention of Alabama citizens and the nation's shipping interests the port's modern, efficient ocean terminals.

On the first day of the celebration, June 25, the State Docks held open house. The second day was sponsored by the World Trade Committee of the Mobile Chamber of Commerce. Delegations from New York, Chicago, Washington, Birmingham, Kansas City, St. Louis, Memphis, Pittsburgh, and many other cities were on hand.

Mobile is not resting, however, on the laurels it has won in the past twenty years. Already plans are being formulated for creation of a Traffic Bureau which would unite all industrial and business interests in their work toward achievement of top place among the nation's ports. The port has opened solicitation offices in other ports to divert trade southward. Efforts are being made to deepen the ship channel into the port. They are seeking to expand the bulk handling facilities of the State Docks.

All in all, if you're competing with Mobile, you'll have to step fast!

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Standard of Calif. Plans $30,000,000 Tanker Program

T. S. Petersen, president of Standard Oil Company of California, has announced the company's new program to build five of the world's largest tankers.

At a cost of approximately $30,000,000 the vessels will have a deadweight capacity of 28,000 tons and a volume capacity of 240,000 barrels. Largest of the big tankers now operated by Standard or its subsidiaries has 18,000 tons deadweight capacity and can carry 150,000 barrels.

Plans are to construct the vessels at the Quincy, Massachusetts yards of the Shipbuilding Division of Bethlehem Steel Company. Delivery is scheduled for 1950 and 1951.

The new ships will be 595 feet long, 84 feet wide and 44 feet deep, with a service speed of 15¾ knots and a maximum speed of 16¾ knots. They will be powered by high pressure steam turbines delivering 12,500 horsepower, with double reduction gears and a single screw. Fully radar-equipped, the ships will have the latest in high-speed equipment for loading and unloading.

The vessels will be owned and operated by Foreign Tankship Corporation, wholly-owned Standard of California subsidiary.

CAPTAIN NATHAN McKENZIE (center) receiving a citation from the National Safety Council in recognition of the fact his San Pedro, Calif., firm, Tanker Loaders Corporation, successfully handled 20,000,000 barrels of highly combustible liquids aboard tankers in Los Angeles harbor without the loss of one barrel due to spills or contaminations. Presenting the award is JIM BISHOP (left), president of the Greater Los Angeles Chapter of the National Safety Council and (right) is REAR ADMIRAL FRANK HIGBEE, USCG (Ret.), warden of the Port of Los Angeles, who signed the citation as vice president of the Los Angeles chapter.

The presentation was made before some 55 executives of oil tanker and shipping firms at the California Club, Los Angeles, where Robert Day, head of the Land Department of the Superior Oil Company, presided. Pres. Bishop, in presenting the citation, said, to his knowledge, no other independent firm has a safety record comparable to Tanker Loaders.

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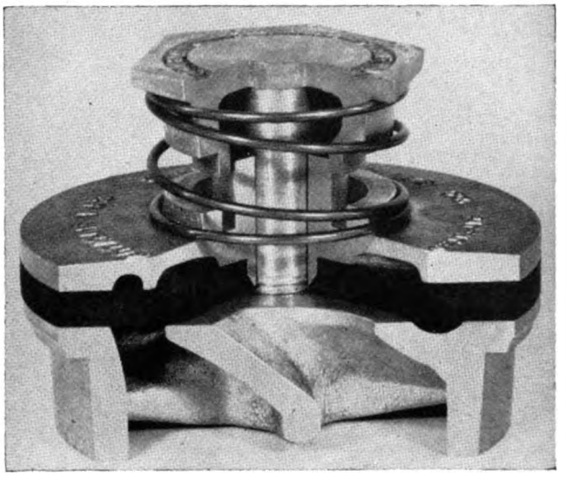

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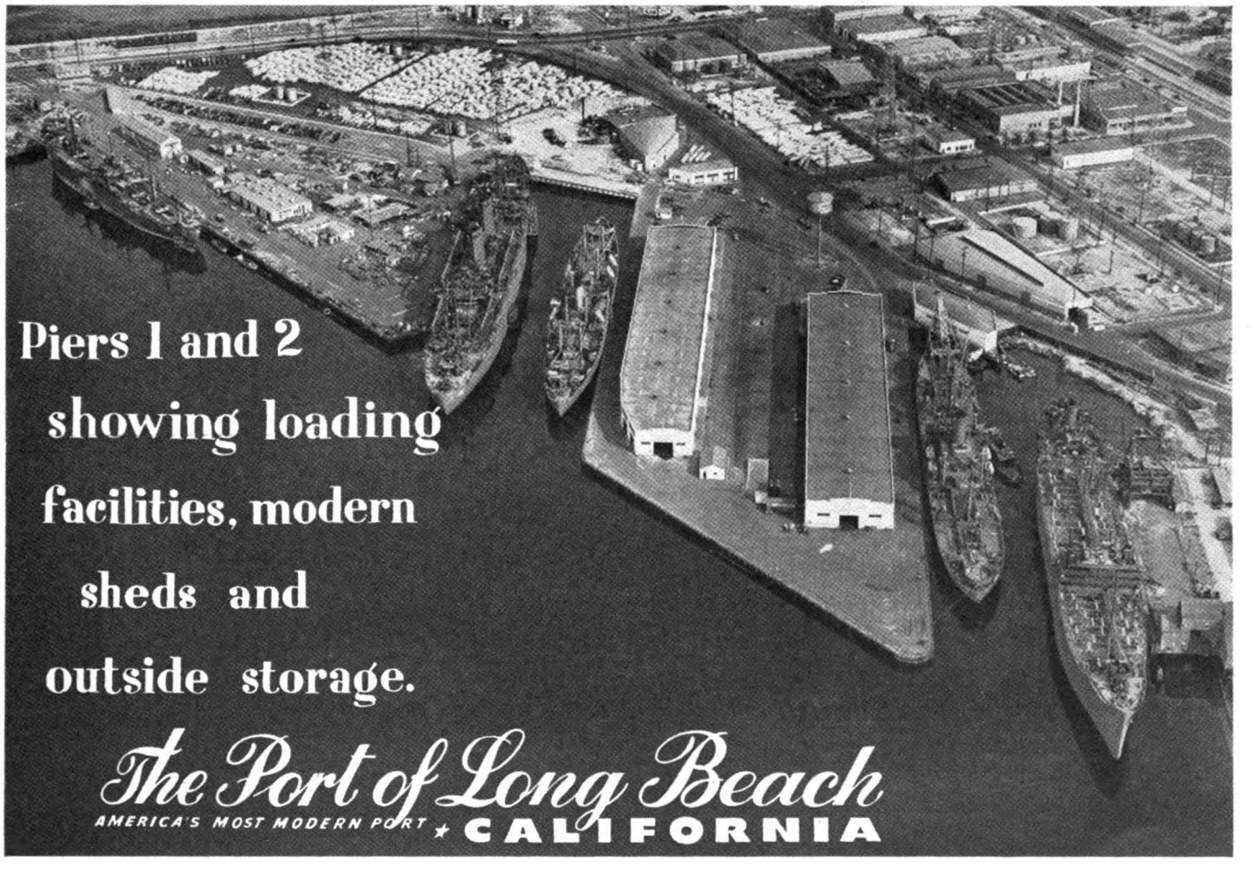

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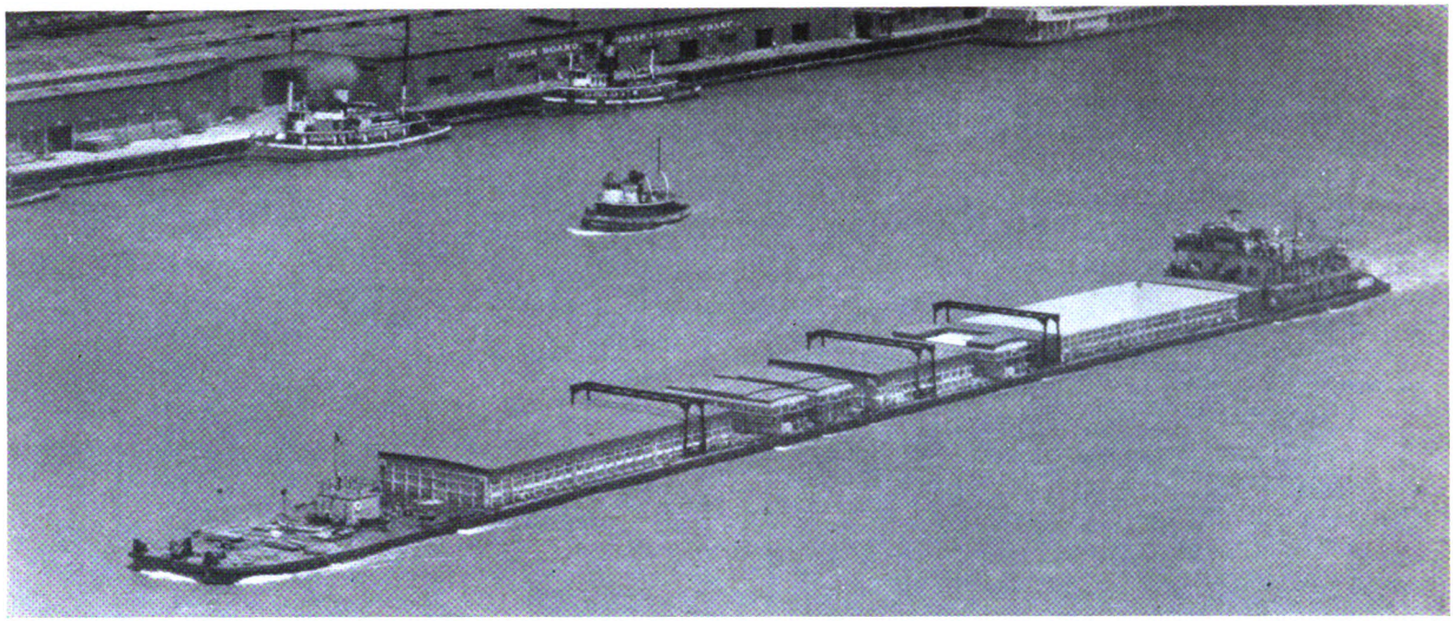

SOMETHING NEW ON THE RIVER—the Towboat HARRY S. TRUMAN, built by Avondale Marine Ways, Inc., Avondale, Louisiana for the Federal Barge Lines.

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Unique Construction Features Towboat HARRY S. TRUMAN

Unique in construction the 1200-foot tow (225 feet longer than the QUEEN MARY) is built in eleven sections; one long spoon-shaped bow which carries fuel oil; three small box shaped barges; one medium size barge, five large barges; and the propelling unit, the towboat HARRY TRUMAN, built by Avondale Marine Ways, Inc., Avondale, Louisiana for the Federal Barge Lines.

The integrated tow, designed by Captain A. C. Ingersoll, Jr., president of Federal Barge Lines, is one of the most powerful boats on the Mississippi, powered by two 1600 h.p. General Motors Diesel Engines. The most modern navigation aids, including Raytheon Pathfinder Radar, Sperry Automatic Steering, Submarine Signal Company Fathometer, Radiomarine radio-telephone, and a Leslie Typhoon Model whistle are installed.

Official trials of the new vessel were described as "highly satisfactory" and a speed in excess of 14 knots was averaged over a run up and down the river. The HARRY TRUMAN made the run from New Orleans to St. Louis, a distance of 1,051 miles, in four days and twenty hours with six barges carrying 5800 tons, about 60% of capacity. This compares with eleven days and eighteen hours for the same run made by the KODAKA, which won the race from the HELENA, last winter.

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The Marine Exposition

(Continued from Page 19)

tute of Technology; Submarine Signal Co.; Tip Top Marine Contracting Co.; Tide Water Associated Oil Co.; Traffic Service Corp.; U. S. Navy; U. S. Coast & Geodetic Survey; U. S. Martime Service Institute; Ward Leonard Electric Co.

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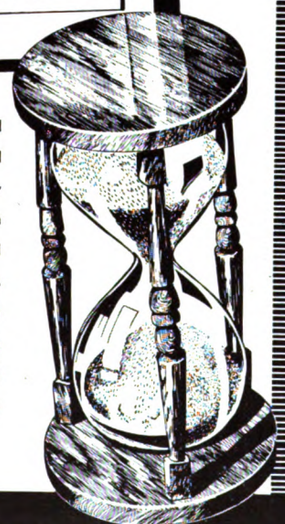

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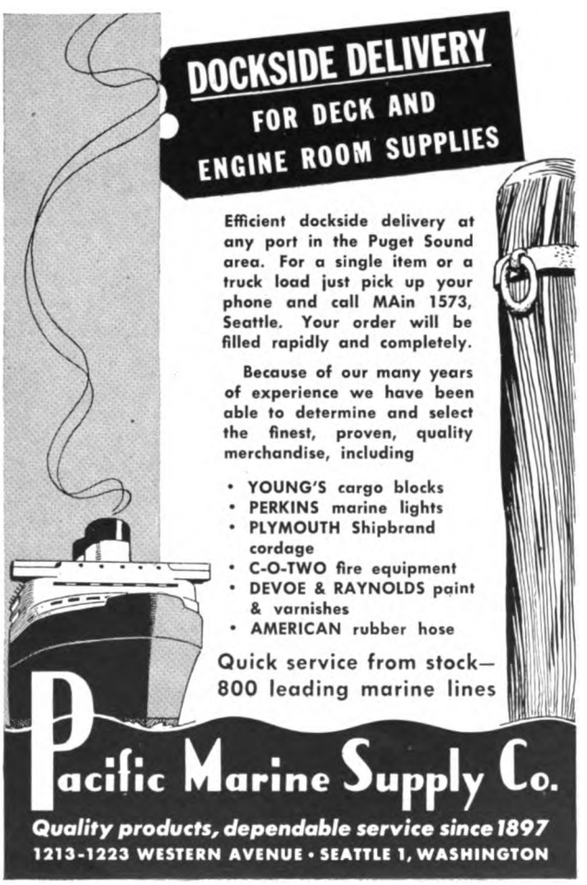

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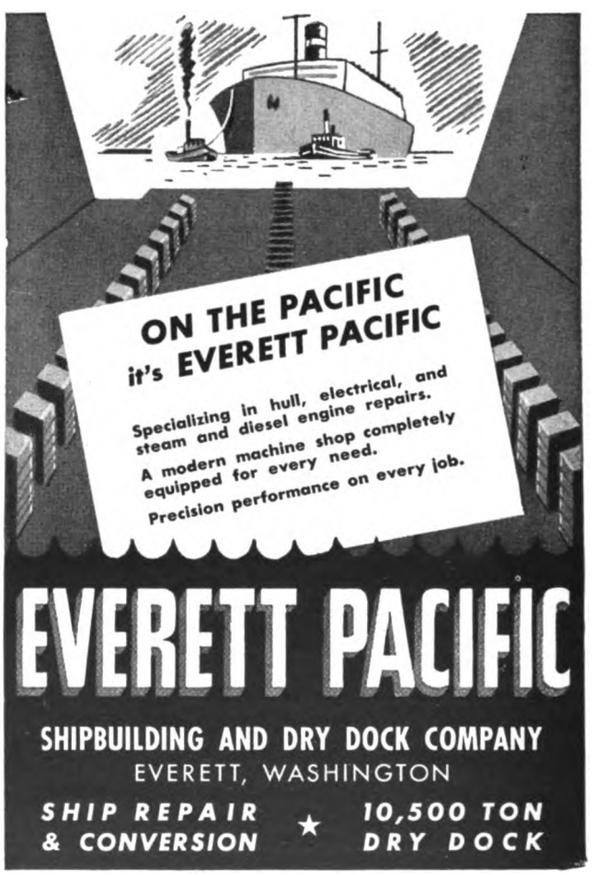

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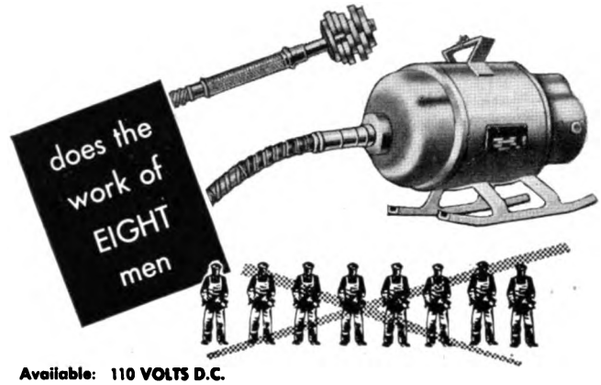

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EQUIPMENTALK

Marine Manufacturers Tell Their Stories . . .

Sherwin-Williams Expands West Coast Marine Operations

The Sherwin-Williams Co. is currently expanding its operations in the marine finishes field in the West Coast area, according to C. M. Lemperly the company's vice-president and director of sales.

As part of the program, S-W recently named Howard C. Hinig to the position of assistant manager of industrial and transportation sales with headquarters in Oakland, California.

Mr. Hinig will have charge of co-ordinating the activities of Sherwin-Williams' Pacific Coast maritime sales organization with the company's factory operations at Oakland. He was previously an assistant to C. B. Bull, sales manager of the transportation sales department at the S-W home office in Cleveland, Ohio.

Sherwin-Williams has served the marine trade for many years through sales outlets in every major coastal area.

Complete stocks of marine finishes are warehoused by the factory branches or established chandlers at Portland, Oregon, Seattle, Washington, Oakland, and Los Angeles, California. Republic Supply Co. is the distributor for S-W marine products in the Port of Los Angeles, San Pedro and vicinity.

V. K. Wolcott of Oakland, California handles Oakland and the Southern California area; F. E. Cresmer of Portland is in charge of the Columbia River Area and J. F. Leutzinger of Seattle handles the Puget Sound territory.

Operations elsewhere in coastal zones include branches at Boston, New York and Newark, N. J. and distributor warehouses of the Maryland Marine Supply Co. at Baltimore, Maryland, C. E. Thurston and Sons, Norfolk, Virginia, Higsen-Doyle Co. at New Orleans; Gordon-Sewall Co. at Galveston and Houston Texas; H. A. Goodman & Co., at Corpus Christi, Texas.

According to Mr Lemperly, Sherwin-Williams marine finishes, which are now becoming available in greater quantity, embody all of the latest technical advancements in paint-making, and these improvements have made possible not only greater durability of finish but also provide better color retention.

Closer co-ordination of the company's West Coast maritime activities is expected by the company to provide faster and better service to customers and permit users of S-W products to take greater advantage of the firm's extensive paint research facilities.

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A. G. Clark, Jr. Named Manager Of Oregon Marine Supply Co.

Archie G. Clark, Jr. has been named manager of Oregon Marine Supply Company in charge of the firm's operations at Portland and Astoria, Oregon, with headquarters at Portland. He succeeds the late Carl Thomas. Thomas died in April, age 70. He entered the marine supply business in 1904 at Seattle under Edward Cunningham, president of Pacific Marine Supply Company. Thirteen years later he transferred to Portland and joined with the late Donald B. McBride and Edward Cunningham in establishing the Oregon Marine Supply Company assuming the position of vice-president and manager, continuing in that position until his death.

A graduate of the University of Washington, Clark served as a major in the U. S. Army during the war and spent some time overseas. During his business career he spent some time with the Columbia Steel Corporation. Before assuming his new duties he was assistant to the manager of Pacific Marine Supply Company, Seattle.

ARCHIE G. CLARK, JR., Manager of Oregon Marine Supply Company, Portland, Oregon.

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Harvey R. Butt has been appointed manager of the Washington office of Radiomarine Corporation of America. The office is located at 1625 "K" Street, N.W., Room 502, Washington, D. C.

SHERWIN-WILLIAMS expands west coast maritime activities with these men . . . left to right—VAN K. WOLCOTT, who handles all the California marine field; F. E. CRESMER, who fills the same capacity for the Columbia River area; J. F. LEUTZINGER, in the same position for the Puget Sound area; HOWARD C. HINIG, Assistant Manager of Industrial and Transportation Sales at Oakland; JOHN B. SANFORD, General Traffic Manager from the Cleveland office, who was on the coast recently calling on the marine trade.

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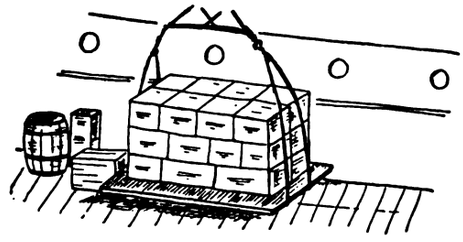

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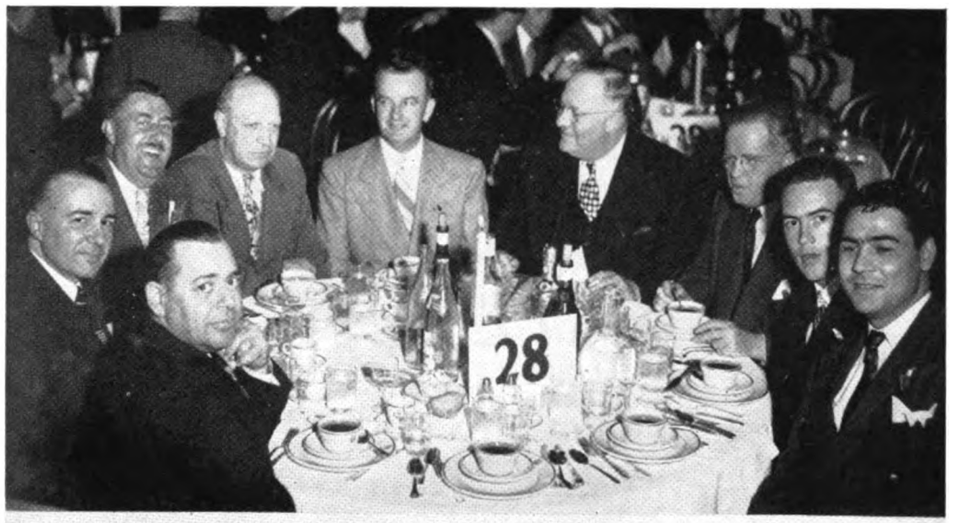

HARBOR SUPPLY COMPANY AND SOPAC SHIP MAINTENANCE COMPANY were among the many San Francisco marine suppliers who entertained guests at the Mariners Club annual party in that city on the night of Maritime Day.

Herewith are pictures of three tables, the top two being those of Harbor Supply and the bottom Sopac: Top, left to right—DICK JONES, American President Lines; BILL TAYLOR, General Steamship Corporation; NORMAN BROWN, Manufacturers' representative; HENRY NELSON, Todd-Pacific Shipyards; JACK RANDALL, De La Rama Steamship Company; A. F. DEVOTO, Harbor Supply; BOB BLATT, Sudden & Christenson; CHARLES CAHILL, Sudden & Christenson and MARIO POLVERE, J. H. Winchester & Company.

Center, left to right—BERK HANLEY, Pacific Far East Line; JOHN CHAMBERLIN, Pacific-Atlantic Steamship Company; OTTO MACKROTH, Tidewater-Associated Oil Company, and HOBBS MERLE, Harbor Supply.

Bottom—JAMES O. McMANUS, center, Pacific Transport Line; left to right, GEORGE SIMPSON, Everett-Pacific Shipbuilding and Drydock Company; BILL HARRIS, Sopac Ship Maintenance Company; BOB MURDOCK, Todd-Pacific Shipyards; TOM SMITH, marine surveyor; JIM CAMP, Sopac; JERRY SOLLEY, Pacific Transport Line; HOWARD TULLY, J. H. Winchester & Co.; JESS JOHNSON, Hurley Marine Works.

Harbor Marine Electric Opens Branch At Oakland, Calif.

Harbor Marine Electric Company, 542 North Avalon Boulevard, Wilmington, Calif., has opened a branch at 501 First Street, Oakland, with George L. Davis, head of the company, in charge. Manager at Wilmington is Alfred J. Canfield. Harbor Marine announces it carries the largest stock of marine electric cable on Pacific Coast.

Hough & Egbert Distribute Sherolite Products

Hough & Egbert, San Francisco, have been named marine distributors for the Pacific Coast and the Hawaiian Islands by Sherolite Products, Inc., Caldwell, N. J., manufacturers of "Sherolite," an electrical insulating varnish; "Shebrolite," a metal conditioner and cleanser, and "Liquid Celofilm," a metal coating. Ed Hough, of Hough & Egbert, announces Marine Solvents Corporation, Wilmington and C. J. Hendry Company and the Weeks-Howe-Emerson Company, San Francisco as dealers.

Head of Viking Pilot Ladder Flies to Norway

Captain Harald Fritzner, widely known on the Pacific Coast for his promotion of marine safety and his development of the Viking pilot ladder returned to his Seattle headquarters in June following a month's business trip to England, the continent and the Scandinavian countries. In addition to visiting old shipping friends he appeared in his capacity of regional director of the Norwegian American Chamber of Commerce, Inc., at the annual board meeting and dinner meeting at Oslo honoring Arne Meidell, chairman of the Norwegian Export Council.

Harbor Supply Opens Portland Branch

Harbor Supply Company, San Francisco, announces it has opened a branch ship chandlery at Swan Island, Portland, to give better service to the Pacific Coast maritime industries. The new store carries complete lines of engine, deck and stewards' department supplies and offers day and night service.

United Engineering Reorganization Personnel

Raymond R. Hasenauer, president of United Engineering Company, announced the reorganization of the company following the relinquishment of its Alameda shipbuilding facilities to the Todd Shipyards Corporation.

George A. Wilson was named general manager and vice president, R. F. Charlton was named vice president, E. E. McClaran was elected treasurer, R. W. Smith was made secretary and A. C. Fiddy elected assistant treasurer and assistant secretary.

United is a wholly owned subsidiary of the Matson Navigation Company and now conducts its ship repair facilities and commercial manufacturing activities at 500 Beale Street in San Francisco.

GE Announces Remote Control Searchlight

A new searchlight with a 32,000,000 candlepower beam equal in brilliance to 250 thousand 100 watt lamps and designated as the Mercury-Arc Searchlight, has been designed for marine use by engineers of the Lighting and Rectifier Division of the General Electric Company.

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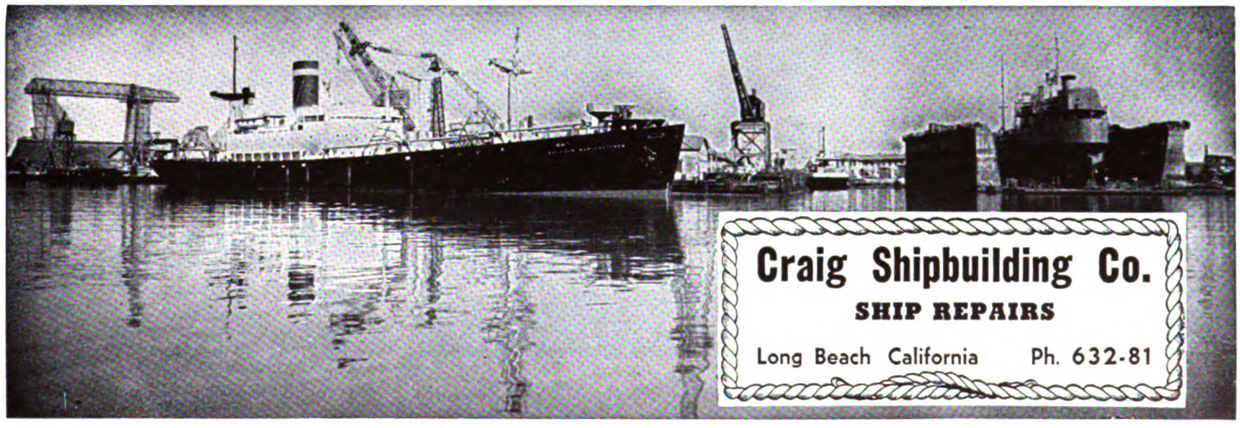

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Piezo Mfg. Corp. Appoints M. J. Gigy Distributor

Piezo Manufacturing Corporation announces the appointment of M. J. Gigy & Associates, as west coast distributor for its products. The states of California, Oregon, and Washington will be handled through headquarters at 110 Market Street, San Francisco, California, by Mr. M. J. Gigy and his organization.

Stock of Piezo products will be maintained in San Francisco to service the marine industry.

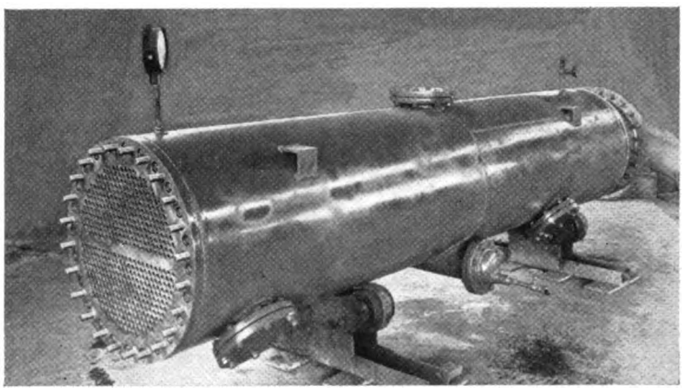
Piezo remote control equipment includes universal gear joints, mitre gear boxes, stuffing boxes, deck boxes and other associated operating gear. Also the new watertight door operating gear.

⚓ ⚓ ⚓

Fred Miller, Portland, Distributor for Crane Packing

Crane Packing Company announces the appointment of Fred Miller, Marine and Industrial Supplies and Service, Inc., Portland, Oregon, as distributor of its line of John Crane packings in Oregon. Announcement of this appointment was made by Wm. Nelson, manager at San Francisco for Crane.

Mr. Miller's company is located at 2501 NW Front Avenue, Portland, in the center of that city's waterfront section.



NEW CONDENSER designed by Pacific Marine Refrigeration Company, Oakland, California, for a C-2 refrigerated vessel operated by Pacific Far East Line. This shows the unit with the head off.

Pacific Marine Refrigeration Designs New Condenser

Pacific Marine Refrigeration Company of Oakland, California, solved the condenser problem on a C-2 refrigerated vessel operated by the Pacific Far East Line, by designing a condenser. After fabrication this condenser received the approval of the United States Coast Guard, the U. S. Maritime Commission, the American Bureau of Shipping, and the superintendent engineer of Pacific Far East Line, V. J. Bahorich, and according to the company is operating at complete satisfaction. Load capacity is 175 tons and it has greater fouling resistance than the condenser taken out.

This condenser is part of the centrifugal Freon 11 installation, which is rated at 175 tons capacity. The ship is equipped with two such installations, one being capable of handling the entire vessel's pay load of refrigerated cargo, while the other acts as a stand-by.

Pacific Marine Refrigeration Company is owned and managed by Alex Johnston, a former chief engineer. Johnston served his apprenticeship at John Brown's Ship Yard in Clydebank, Scotland, at which time he was called into the British Navy in World War I. He later served the Union Steamship Company of New Zealand for six years, receiving his chief's license in 1924.

⚓ ⚓ ⚓

Marine Service, Inc. Seattle To Handle American's Cordage

The American Manufacturing Company of Brooklyn, N. Y., has announced the appointment of Marine Service, Inc., Seattle, Washington, as their marine and fishing distributors in the Seattle area.

One of the largest producers of cordage in the country, American Manufacturing has been serving the marine field with ship's cordage for nearly a century. In addition to the main plant at Brooklyn, American also operates cordage mills in St. Louis and Philadelphia.

Headed by Quentin A. Herwig, Marine Service, Inc., acts as agents for International Paint Co., Gamlen Chemical Co., Bird-Archer boiler water treatment and Sea-Ro and Rains packings, and operates a tank and boiler cleaning and general ship maintenance division.

STATES STEAMSHIP COMPANY recently installed Sperry radar and loran sets aboard five of its vessels, the motorship IDAHO and the steamers OREGON, CHARLES E. DANT, WYOMING and COLORADO.

Dahl-Beck Electric Company, San Francisco, did the installation work on the DANT and the WYOMING; the Bethlehem shipyard at San Francisco handled the jobs on the IDAHO and OREGON and the Albina Engine and Machine Works worked on the COLORADO.

Shown here is CAPTAIN J. C. PHILIPPSEN, master of the mv IDAHO at the new Sperry radar aboard his vessel.

AMERICAN MANUFACTURING COMPANY Appoints Marine Service, Inc., Seattle, marine and fishing distributors in the Seattle area . . . left to right—CAPTAIN E. G. HEINRICI, Marine Service, Inc.; CHARLES M. PEABODY, Tait Stevedoring Company; Q. A. HERWIG, and PETER M. PASSE, Marine Service, Inc.; J. J. LOWE, American Manufacturing Company, Brooklyn; J. E. MURPHY, unattached; JAMES W. HATTEN, FRANK P. JARVIS, Marine Service, Inc.; H. V. MOORE, Matson Line.

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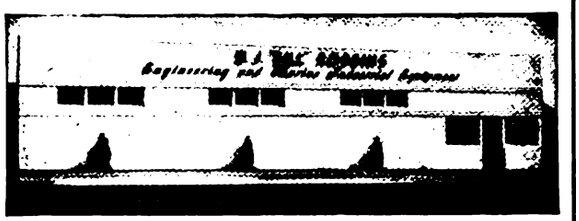

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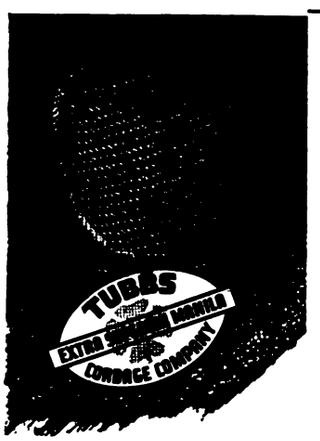

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ADVERTISERS INDEX

Aerial Products, Inc. 31
Albina Engine & Machine Works 39
American Brass Co. 56
American Export Lines 44
American Hoist & Derrick Co. ... 11
American Mail Line 47
Anchor Equipment Co. 37
Arnessen Electric Co. 45
Asbestos Supply Companies ... 43
Babcock & Wilcox Co. (Refractories Division) 9
Baier & Associates, L. S. 56
Baker Dock Co. 55
Bird-Archer Co. of Calif. 55
Boland Machine & Mfg. Co. 47
Bratsberg, Capt. A. J. H. 56
California Ship Repair Corp. ... 54
Catalina Island Steamship Line 54
Cavanaugh Machine Works 49
Central Maritime Contract'g Co. 53
Columbia Machine Works 54
Combustion Eng. Co., Inc. 7
Commercial Ship Repair 5
Cordes Bros. 55
Craig Shipbuilding Co. 49
Curtis Bay Towing Co. 4
Dahl-Beck Electric Co. 41
Dampney Co. of Amer., The 37
Dee Engineering Co. 54
De Laval Steam Turbine Co., The 52
Dravis Eng. & Machine Works .. 53
Duke's Packing Co. 54
Everett Pacific Shipbuilding & Dry Dock Co. 44
Fairbanks, Morse & Co. 1
General Eng. & Dry Dock Co... 49
Gladding, McBean & Co. 55
Gew Inc., Alexander 55
Griffiths & Sprague Stevedoring Co. 51
Guralnick, Morris 56
Hanson, H. C. 56
Harris, Manly 56
Hart & Burns, Inc. 33
Hickman Engineering Co. 44
Hiller, Paul W. 55
Horton Agency, Lou E. 56
Hough & Egbert Co. 52
Isherwood & Co., Sir Joseph W. 55
Jeans, Capt. Harvey A. 56
Long Beach, Port of 41
Luce & Co. 39
Marine Electric Co. 53
Marine & Industrial Supply, Inc. 55
Marine Service, Inc. 18
Maritime Engineering 55
Moore & Co., Engineers, C. C... 9
Moore-McCormack Lines 43
Morrison & Bevilockway 55
National Bulk Carriers, Inc. 53
Nickum & Sons, W. C. 56
Nordberg Mfg. Co...Front Cover, 3
Northwest Marine Iron Works... 51
Nystrom, Capt. E. W. 56
Ocean Tow, Inc. 43
O'Donnell Copper Works, E. M. 55
Oxi Corporation 2
Pacific Marine Supply Co. 44
Perry, L. C. 56
Pilot Marine Corp. 15
Puget Sound Bridge & Dredging Co. 53
Puget Sound Freight Lines 56
Refractory Coatings Co. 52
Refrigeration Components 47
Republic Electric Co. 52
Robbins, W. J. "Bill" 52
Rothschild International Stevedoring Co. 55
Seaboard Machinery Corp. 8
Sea-Ro Packing Co. 33
Seaside Supply Stores, Inc. 54
Seattle Marine Surveyors 56
Seattle, Port of 45
Sherwin-Williams Co. 6
Sims Pump Valve Co., Inc. 41
Socony-Vacuum Oil Co. Inside Front Cover
Sopac Ship Maintenance Co. 42
Standard Oil Co. of Calif. 13
Sumco Products, Inc. 52
Sweetin Co., J. L. 56
Swett & Co., George E. 51
Swett-Stone Corp. 45
Texas Co., The Outside Back Cover
Thorpe & Son, Inc., J. T. 47
Todd Shipyards Corp. 17
Toumey Electric & Eng. Co. 49
Tubbs Cordage Co. 54
United Fruit Co. Inside Back Cover
Western Asbestos Company ... 47
Western Machinery Co. 56
Winter Co., E. V. 51
Woodlawn Flower Co. 54

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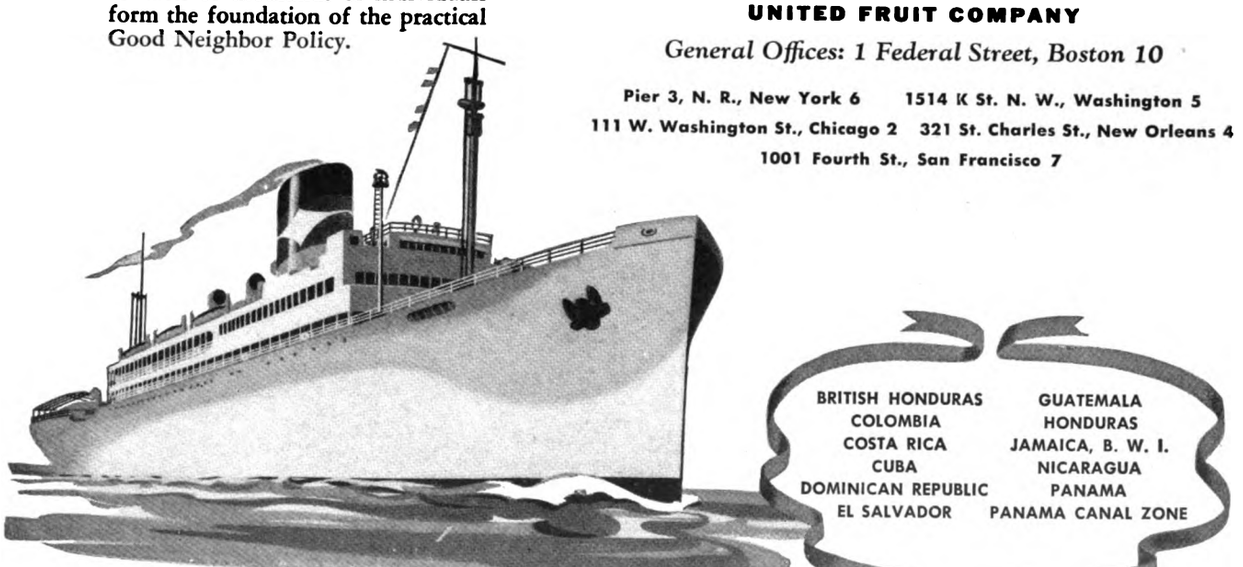

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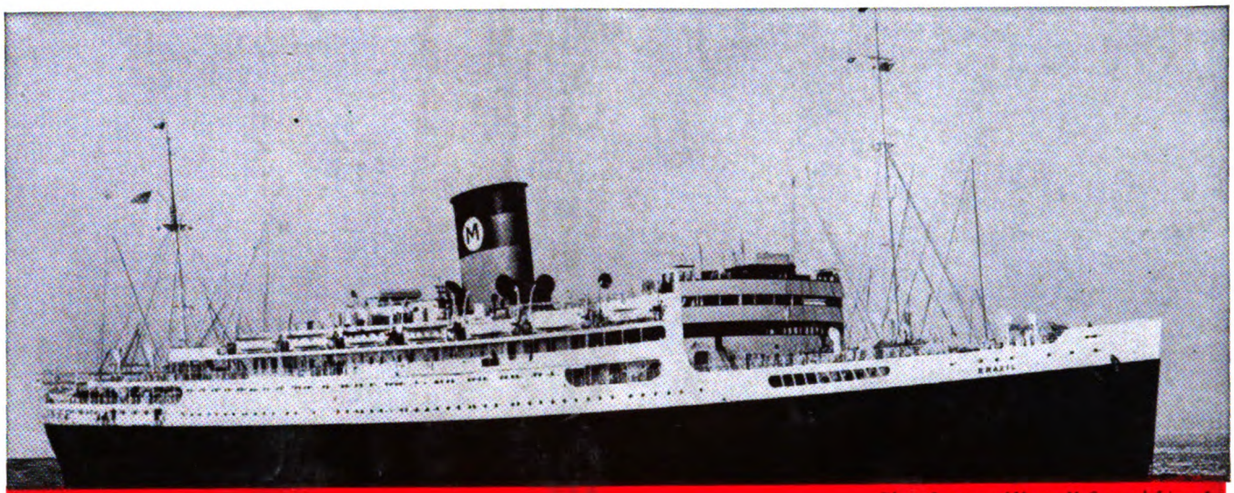

Photo Courtesy of Moore-McCormack Lines, Inc.

Set Your Course For Economy

YOU steer a straight course for savings with Texaco Marine Lubricants. Whatever your propulsion units or auxiliaries, there is a Texaco Marine Lubricant to keep each running at its best . . . to assure dependable, full power performance . . . lower costs for maintenance and fuel.

Your vessels can enjoy these benefits wherever they go . . . for Texaco Marine Lubricants are available at more than 350 ports in the U. S. and around the world . . . and are always uniform in quality everywhere.

Assure greater engine efficiency and lower maintenance costs with Texaco Marine Lubricants

Texaco Marine Engineers will gladly assist in selecting lubricants and make regular service calls on board ship. The Texas Company, *Marine Sales Division,* 929 South Broadway, Los Angeles 15, California.

TEXACO

TEXACO Marine Lubricants

Tune in...Texaco Star Theatre every Wednesday night featuring Gordon MacRae and Evelyn Knight...ABC Network

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THE LOG OF AMERICA'S MARITIME INDUSTRIES

The LOG

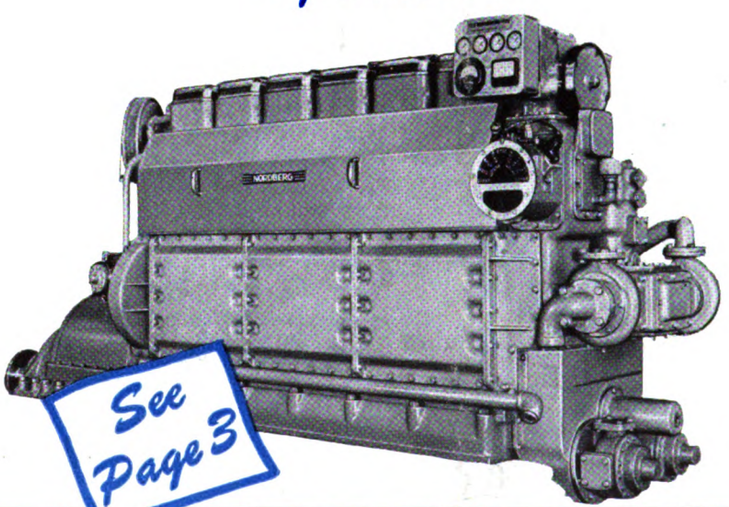
REVIEW and YEARBOOK NUMBER

JULY 1, 1948

VOLUME 43 - NUMBER 8

ADVERTISERS' INDEX ON PAGE 176
EDITORIAL INDEX ON PAGE 63

NORDBERG POWER
for Dependable and Profitable Operation



NORDBERG
DIESEL ENGINES

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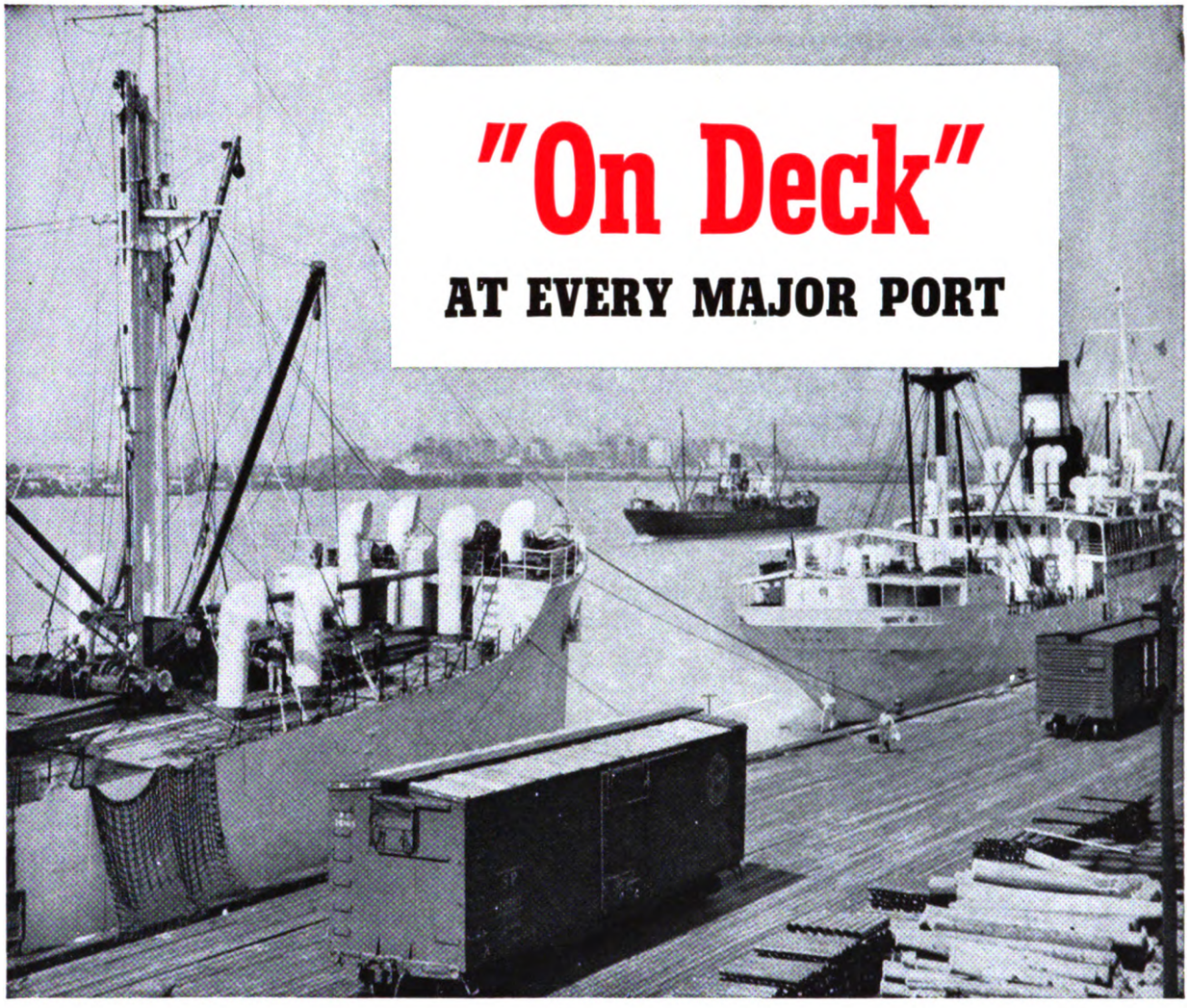

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CIRCLES THE GLOBE

Expert service, immediately! . . .

That's what operators of Gargoyle-lubricated ships expect, *and get*, in any principal world harbor.

Before your ship docks, the resident Gargoyle Marine Representative knows its current lubrication problems. He can supply its needs without delay.

Get high-quality Gargoyle Marine Oils and Engineering Service —on deck everywhere!

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MARINE OILS AND ENGINEERING SERVICE

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AMEROID

MARINE PRODUCTS AND SERVICES

COMPLETE BOILER WATER TREATMENT

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MARINE DEPARTMENT

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COMPLETE AMEROID SERVICE BY E. F. DREW & CO. ENGINEERS is available in principal seaports in the U. S., Canada, Panama Canal Zone, Argentina, Brazil, France, Italy and Union of South Africa

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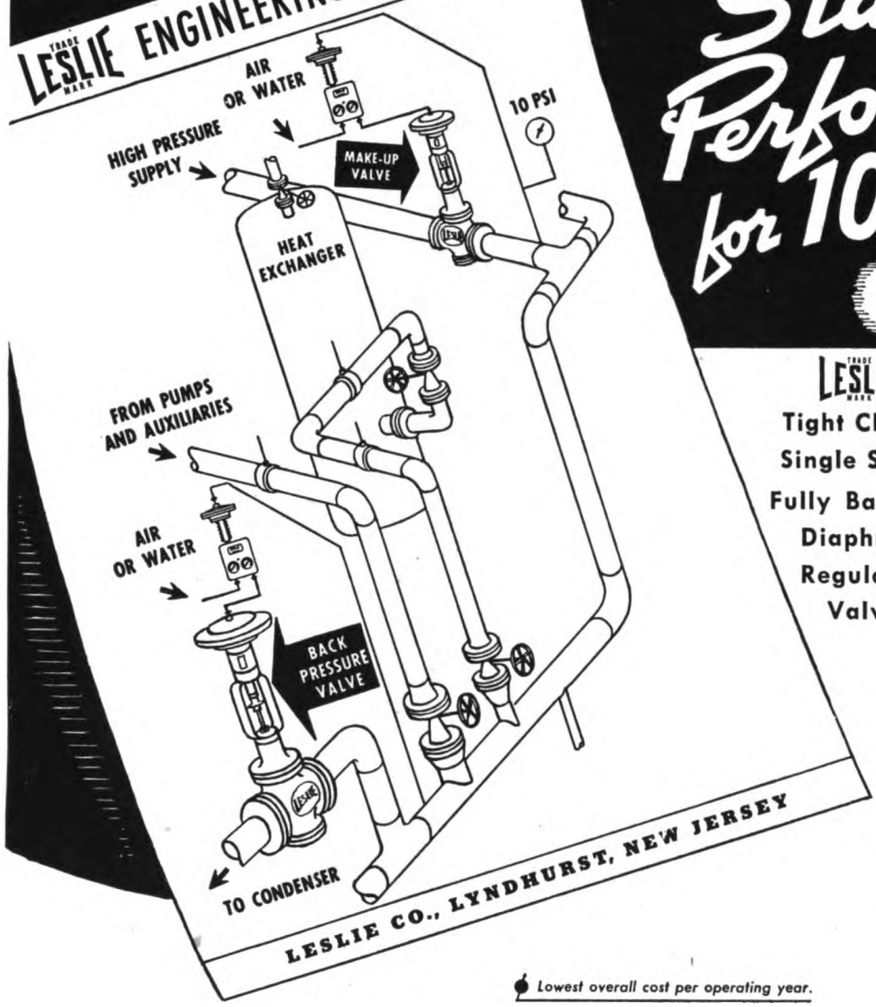
LESLIE ENGINEERING DATA

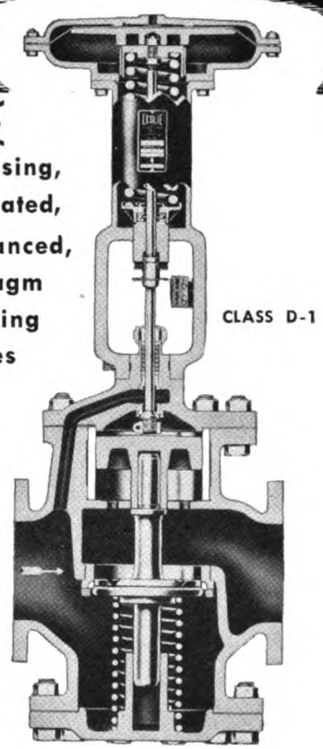


Starred Performance for 10 Years

LESLIE

Tight Closing, Single Seated, Fully Balanced, Diaphragm Regulating Valves

CLASS D-1



Lowest overall cost per operating year.

This typical piping layout shows how **LESLIE** Diaphragm Regulating Valves with **LESLIE** Control Pilots (air or liquid operated) are used to maintain exact pressures within close limits.

Accuracy and reliability are very important to assure constant steam pressure for feed water heating and many kinds of process heating. The make-up valve supplies steam at 10 PSI to supplement exhaust from auxiliaries and the back pressure valve relieves any excess steam at 12 PSI to the condenser or to atmosphere.

Offer These ADVANTAGES

- ★ **SINGLE SEATED, FULLY BALANCED**—combines dead-end, tight shut-off with double seated capacity; smooth response for small changes in diaphragm pressure.
- ★ **SMOOTH THROTTLING CONTROL**—without pressure drop limitation up to 600 PSI. Sizes up to and including 8" with bronze or cast iron bodies, 1¼-4" cast steel.
- ★ **LARGE CAPACITY**—equal to or greater than standard, long stroke, double seated valves.
- ★ **LOW FRICTION STUFFING BOX**—specially designed packing including plastic, asbestos and metal rings in each set, requires minimum attention.
- ★ **INTERCHANGEABILITY OF REPLACEMENT PARTS**—hardened main valves, hard face seat rings and hardened stem bushings renewable.

For full details send for your copy of Bulletin 462.

LESLIE CO. 265 Grant Avenue, Lyndhurst, New Jersey

Look for LESLIE Regulators under "Valves" or "Regulators" in your Classified Telephone Directory in the following cities where LESLIE factory-trained engineers are located.

Baltimore, Md.	Houston, Tex.	Norfolk, Va.	St. Louis, Mo.
Boston, Mass.	Louisville, Ky.	Philadelphia, Pa.	San Francisco, Cal.
Chicago, Ill.	Mobile, Ala.	Pittsburgh, Pa.	Savannah, Ga.
Cincinnati, Ohio	New Orleans, La.	Portland, Ore.	Seattle, Wash.
Cleveland, Ohio	New York, N. Y.	Richmond, Va.	Wilmington, Cal.
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ESTABLISHED 1900 LESLIE CO.

PRESSURE REDUCING VALVES • PUMP GOVERNORS • PRESSURE CONTROLLERS
TEMPERATURE REGULATORS • SELF CLEANING STRAINERS • LESLIE-TYFON WHISTLES

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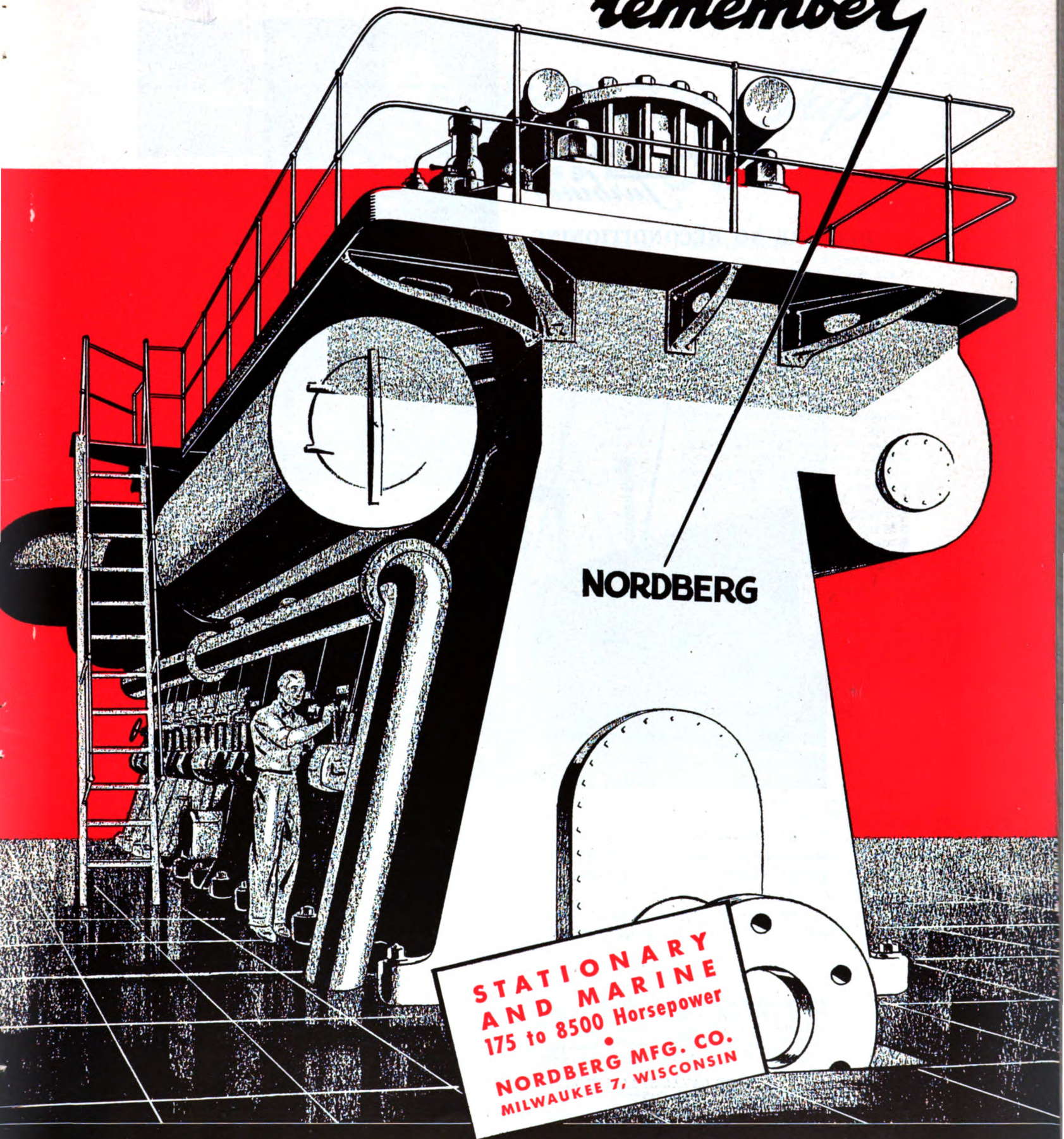
When considering DIESEL POWER *remember*



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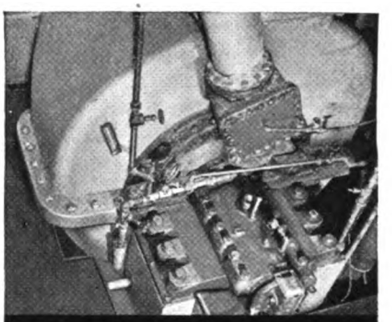
DE LAVAL

Turbines

REQUIRE NO RECONDITIONING

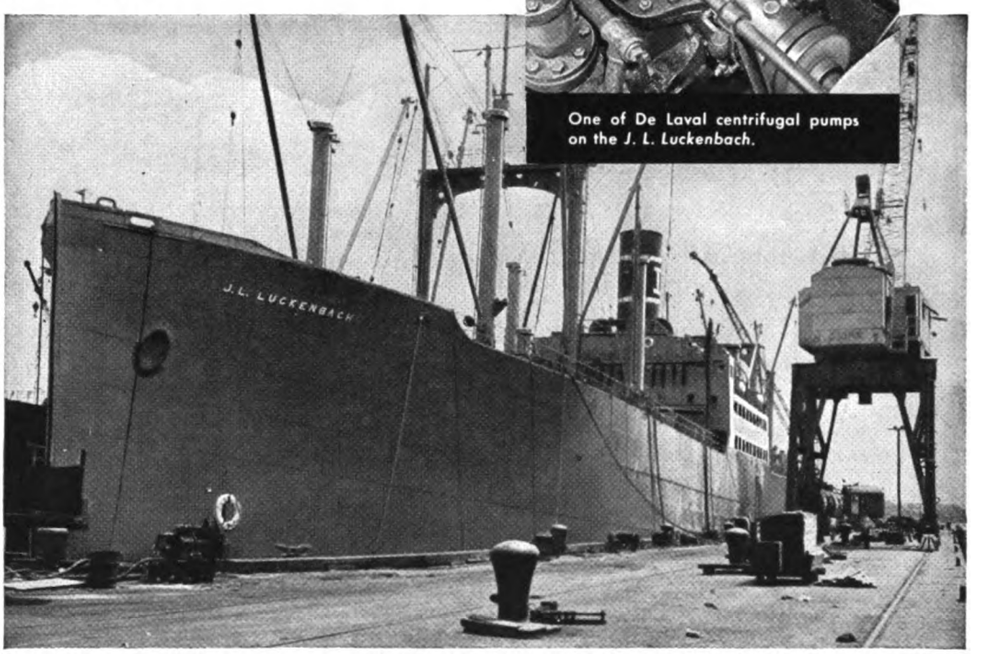
AFTER 28 YEARS SERVICE



De Laval turbine still in use after 28 years of service.

One of De Laval centrifugal pumps on the *J. L. Luckenbach.*

J. L. Luckenbach. 13,000 ton 5,000 HP freighter completed March, 1919 by the Sun Shipbuilding Co. for the Luckenbach Steamship Co.



After 28 years of service, and 1,300,000 miles, the De Laval geared turbines, feed pumps and generators on the J. L. LUCKENBACH are still in such good condition that no major repairs or replacements have been required in refitting the ship for post war service.

For over thirty years, De Laval geared turbine propulsion units have proved their rugged reliability. The latest designs also offer the utmost in economy of fuel, space and weight.

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Distinctive Ships

POWERED BY C-E BOILERS

1 PRESIDENT CLASS SHIPS—Both the PRESIDENT CLEVELAND and PRESIDENT WILSON, new ships of the American President Lines are powered by C-E Boilers; 4 boilers per ship, bent tube Type V2M; capacity—40,000 lb steam per hr, operating pressure — 600 psi; total steam temperature — 840 F.

2 ALCOA SHIPS — The three new ships of the Alcoa Steamship Company — the ALCOA CAVALIER, ALCOA CLIPPER and ALCOA CORSAIR — are all powered by C-E Boilers; 2 per ship, Type SM Sectional Header, capacity — 37,500 lb steam per hr, operating pressure — 450 psi, total steam temperature — 750 F.

3 SANTA SHIPS — Recent additions to the Grace Lines Santa Fleet comprise six converted C-2's. All of them, as well as three other ships of the same type previously added to the fleet, are powered by C-E Boilers; 2 boilers per ship, Type SM Sectional Header, capacity — 26,500 lb steam per hr, operating pressure — 450 psi and total steam temperature — 750 F.

4 LLOYD BRASILEIRO FLEET — The Brazilian Government ordered twenty vessels for their new cargo fleet. Several have already been delivered, others are building. All are powered by C-E boilers, 2 boilers per ship, Type SM Sectional Header, capacity — 30,000 lb steam per hr, operating pressure — 465 psi, total steam temperature — 750 F.

5 ORE CARRIERS—OCEAN GOING—Notable among recently built ships are the ore carriers VENORE, MARORE, LABORE and FELTORE built by Bethlehem-Sparrows Point Shipyard, Inc. for the Ore Steamship Corporation. These vessels are equipped with the highest pressure marine boilers ever applied commercially. There are 2 C-E Boilers per ship, bent tube Type V2M; capacity — 50,600 lb steam per hr, operating pressure—1450 psi, total steam temperature — 750 F. There are 4 more such ships to be built; of these, two have been launched but not yet fitted out.

6 ORE CARRIERS—GREAT LAKES—Ore carriers in this category are the SEWELL AVERY, THOMAS WILSON, J. BURTON AYERS, E. G. GRACE, JOHN T. HUTCHINSON and the CHAMPLAIN. Each of these ships is equipped with 2 C-E Boilers, Type SM Sectional Header, fired by C-E Spreader Stokers. These boilers are designed to produce 14,500 lb steam per hr at 230 psi and 640 F.

7 TANKERS — In this category there are 287 ships (T2-SE-A1) powered by C-E Boilers — 2 boilers per ship. All these boilers are Type SM Sectional Header designed to produce 32,056 lb steam per hr at 450 psi and 730 F. There are also 9 T2-SE-A2 tankers, each having 2 C-E Boilers per ship, Type V2M, designed to produce 43,000 lb steam per hr at 600 psi and 825 F.

8 DREDGES — SEAGOING — Two large seagoing dredges, the COMBER and GERIG, have recently been delivered to the Corps of Engineers, U.S. Army. Two more, the LANGFITT and the BIDDLE, are now building. They are the largest all-welded vessels of their type in the world. All have C-E Boilers, 2 per ship, of the Type SM Sectional Header, each designed to produce 38,000 lb steam per hr at 450 psi and 750 F. B-184A

COMBUSTION ENGINEERING

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Pacific Coast: R. L. JOHNSON CO., Monadnock Bldg., San Francisco, and Petroleum Bldg., Los Angeles

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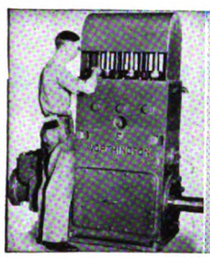
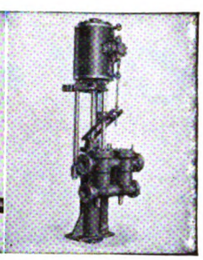
WORTHINGTON PUMP AND MACHINERY CORPORATION

General Offices, Harrison, New Jersey

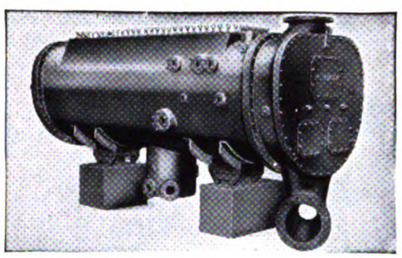
Works: Harrison, N. J., Newark, N. J., Buffalo, N. Y., Wellesville, N. Y., Holyoke, Mass.



Variable capacity power pump for boiler feeding

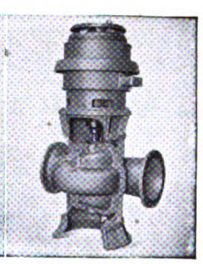


High pressure steam pump for boiler feeding

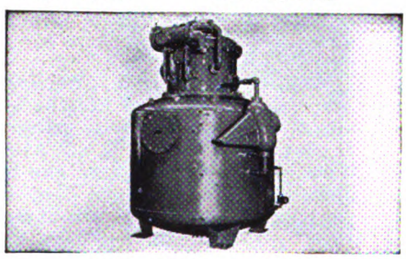


Main steam condenser of special marine surface type

Vertical rotary pump for fuel oil transfer and lube oil service



Vertical centrifugal pump for condenser circulating service



Spray type feedwater deaerator for marine service

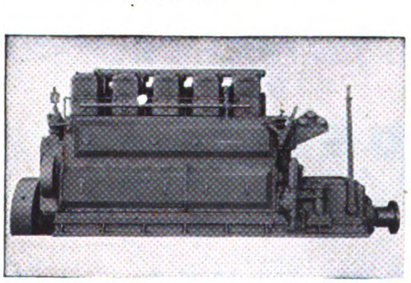
WORTHINGTON

The following listing and accompanying illustrations give a cross-section of the Worthington equipment serving the marine field. But they do not show what Worthington engineering is doing and has done during the past eighty-odd years to solve specialized marine pumping and power problems. You, too, are invited to make use of Worthington's consulting service without charge or obligation.

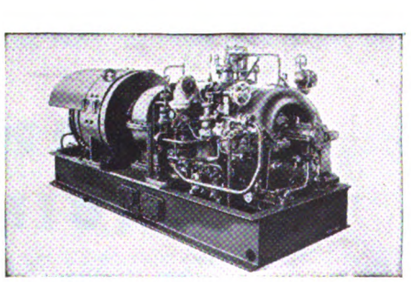
WORTHINGTON EQUIPMENT GIVING SHIPBOARD SERVICE

- *Steam Turbine Generator Units*
- *Multi-Stage Steam Turbines*
- *Single-Stage Steam Turbines*
- *Combined Turbines and Gear Units*
- *Centrifugal Pumps* — all types and capacities for all shipboard services
- *Reciprocating Pumps* — steam driven, motor driven and variable capacity pumps
- *Rotary Gear Pumps* — for handling oils and viscous liquids
- *Vertical Turbine Pumps* — for bilge service, main cargo and stripping
- *Steam Condensers and Steam-Jet Ejectors* — for all shipboard vacuum services
- *Deaerating Feed Water Heaters*
- *Air Compressors*
- *Diesel Engines*—for ship services
- *Refrigerating and Air Conditioning Equipment*
- *Multi-V-Belt Drives* — complete drives; sheaves or belts only
- *Liquid Meters* — all types: hot or cold water, oil, etc.

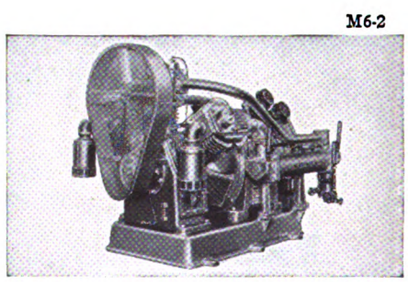
M6-2



Direct reversible 8-cylinder marine Diesel propulsion engine



300 k.w. geared condenser type turbine generator unit for auxiliary power and lights



3-cylinder 2-stage air-cooled air compressor for ship service

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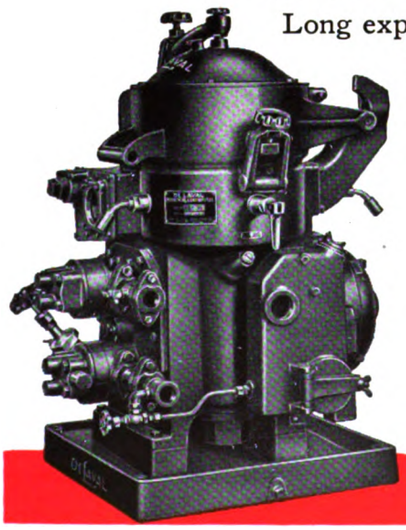
ALL 12 HAVE THE SAME GOAL:

to protect the power unit against dirt and water

Atlantic Refining Co.
California Texas Oil Co.
French Line
General Petroleum Corp.
General Steamship Corp.
Lloyd Brasiliero Line
Luckenbach Steamship Co.
Ore Steamship Co.
Pittsburgh Steamship Co.
Standard Oil Co. of N. J.
United Fruit Co.
Waterman Steamship Co.

THESE 12 are among the operating companies which during the past year bought De Laval Oil Purifiers to do exactly the same thing: to keep the lubricating oil aboard one or more of their vessels in best possible condition.

The De Laval Purifiers, by means of centrifugal force, remove ***both*** of the chief enemies of good lubricating oil performance—***dirt*** and ***water***. They assure that the oil reaches the bearings clean and dry. In the case of turbine-powered vessels, they reduce to a minimum any tendency of the oil to form sludge.



Long experience has shown that at sea centrifugal force is the most practical means of maintaining lubricating oil. A De Laval on continuous by-pass will rid the oil of impurities three or four times a day.

THE DE LAVAL SEPARATOR COMPANY
165 Broadway, New York 6 427 Randolph St., Chicago 6
DE LAVAL PACIFIC CO., 61 Beale St., San Francisco 5
THE DE LAVAL COMPANY, Limited, Peterborough, Ont.

DE LAVAL

LUBRICATING OIL PURIFIERS

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Men who know these three lights

know Hendry quality and service

Past the San Francisco Lightship, the Los Angeles Harbor Light, and the Point Loma Light at San Diego, go the men who best know C. J. Hendry quality and service. On liner, freighter, tug, yacht, and fishing boat, these men know that their needs can be filled immediately from C. J. Hendry's own warehouses, rigging lofts and sail lofts.

During the past 82 years, C. J. Hendry has literally become factory branches for the nation's leading marine equipment manufacturers. Here you obtain every benefit you can from the factory, plus immediate service, plus the convenience of placing one order with one company for all supplies.

C. J. HENDRY FACILITIES for serving you are illustrated at the right. If all our buildings and warehouses were placed side by side, they would form a town like that shown.

C. J. HENDRY CO.

San Francisco — **27 Main Street**
San Pedro — **111-121 S. Front Street**
San Diego — **930 State Street • 2904 Canon St.**

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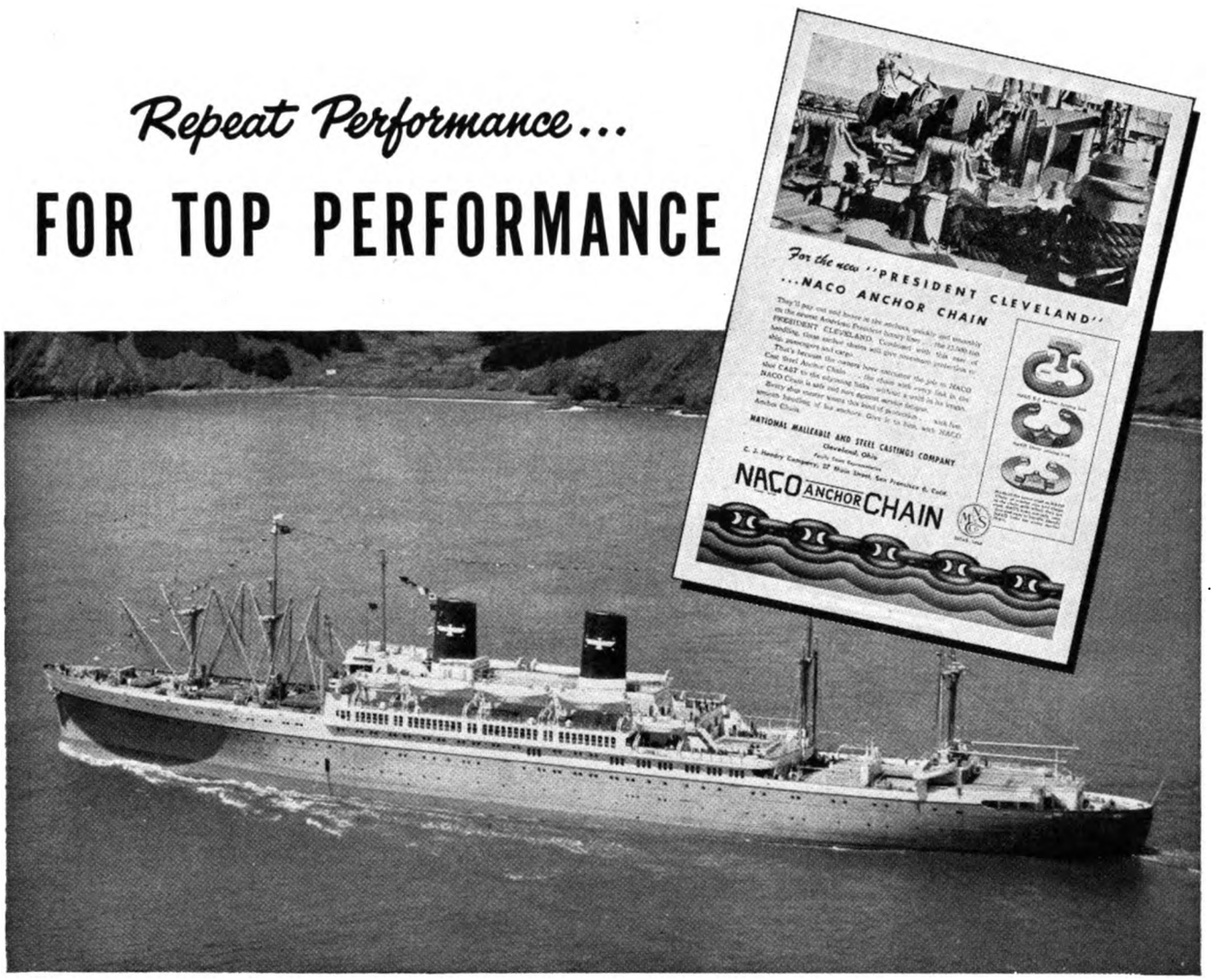
Repeat Performance...

FOR TOP PERFORMANCE



ESTAB. 1868

M&S Co.

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

Cleveland, Ohio

Pacific Coast Representative
C. J. Hendry Company,
27 Main Street,
San Francisco 5, Calif.

• On the new President Wilson, as on her sister ship the President Cleveland, there will be no worries about anchor chain performance.

That's because the American President Line chose NACO ANCHOR CHAIN for its newest liner. These owners know NACO chain combines extreme ease of handling with maximum safety to the ship, passengers and cargo.

NACO chain is safe and smooth-handling. It's cast entirely from special NACO steel . . . 10% stronger than specification proof load . . . 40% stronger than wrought iron chain of the same size. There isn't a weld in the entire length and no projections to bind or catch in the wildcat.

You'll get these top-performance features too . . . when you specify NACO ANCHOR CHAIN.

NACO ANCHOR CHAIN
TRADE MARK

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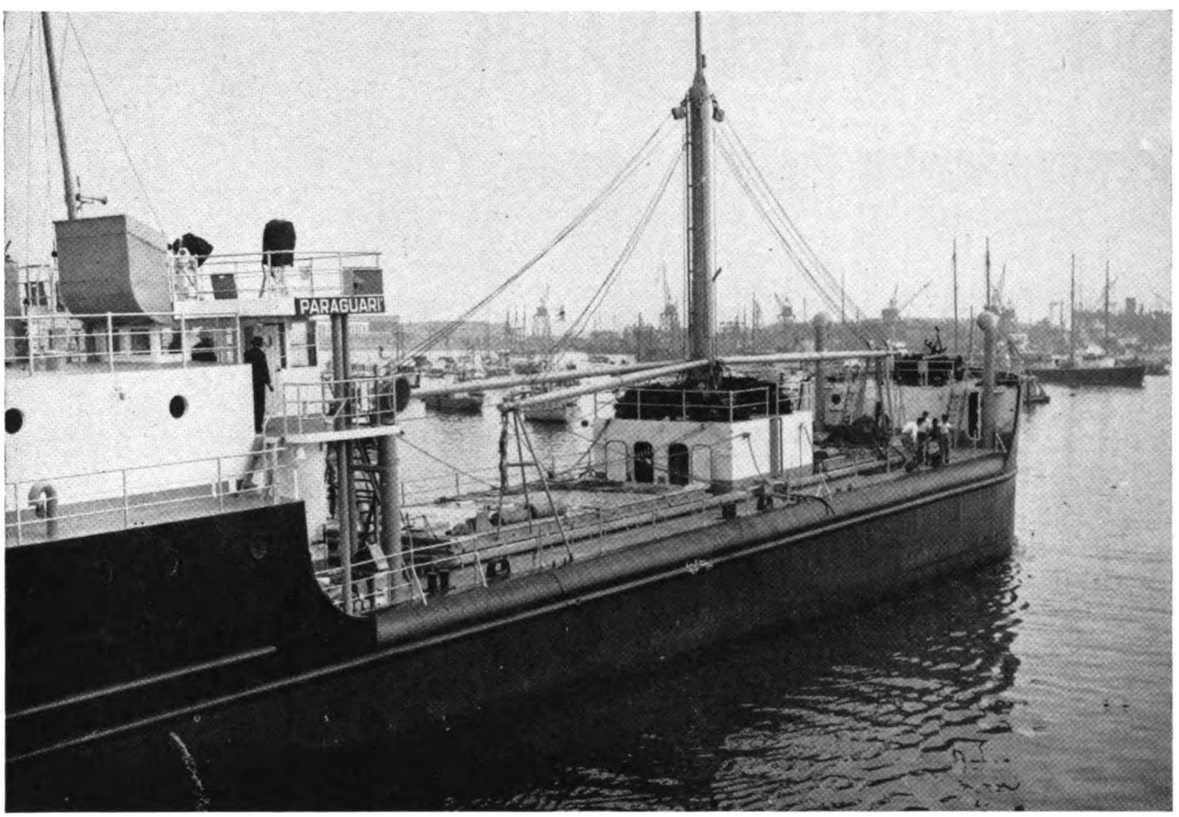
CONVERTED - FROM TANKSHIP TO FREIGHTER IN 28 DAYS



M. S. PARAGUARI', one of three Paraguayan conversion jobs

• IN CO-OPERATION with Uhlin Machine Works, a neighboring Wilmington firm, Cavanaugh Machine Works wound up in 28 working days a conversion job awarded on low bid. The 179-ft. M.S. PARAGUARI' sailed from our conversion docks as a modern dry cargo vessel of 34,773 cu. ft. capacity, transformed from her original U. S. Army "Y" tanker design. Shortly, she was followed by two sister-ships similarly converted for the Paraguay States Merchant Fleet Corp.

• THE JOB was interesting. Hull construction was unusual, consisting of 15-in. transverse ship channel throughout, no ordinary plating. With 12 sets of portable welding and cutting equipment at dockside, and working 16 hours daily, we burned out all tanks, shifted all fore-and-aft girders, faired them for alignment of new hatch combings. We removed all pumps, piping, and the forward and after coffer dams, together with all original cargo bulkheads except No. 26.

• AFTER CUTTING two hatches (15 x 35 and 15 x 25 ft.—ideal for lumber, long length steel, pipe, etc.) in the deck forward of the bridge, we installed ⅜" deck plating, then mounted a prefabricated resistor house of ¼" plate between the hatches, in it installed two 30 kw. 230 volt d.c. generators to power the new 2-ton double-purchase deck machinery.

• THE 60-FT. KINGPOST, weighing 12,900 lbs., was installed through the resistor house in solid mounting with no stays, and rigged with four 40-ft. booms tested to 6 tons. We converted the pump room into the officers' mess, and cast off PARAGUARI's lines at 8 bells, 29 May, 1948—just in time for crews supper.

• TODAY, the PARAGUARI' and her sisters YGUREY and YPORA are earning their way in dry cargo for Paraguay. The agency, Transmarine Nav. Co., credits us with a "rugged job, well done."

COMPLETE SERVICE and REPAIRS FOR VESSELS DOCKING AT LOS ANGELES HARBOR

CAVANAUGH MACHINE WORKS

Frank Cavanaugh, Owner

220 East B Street — WILMINGTON, CALIF. — Ph.: TErminal 4-5219

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THE SHARPLES EN BLOC PURIFIER

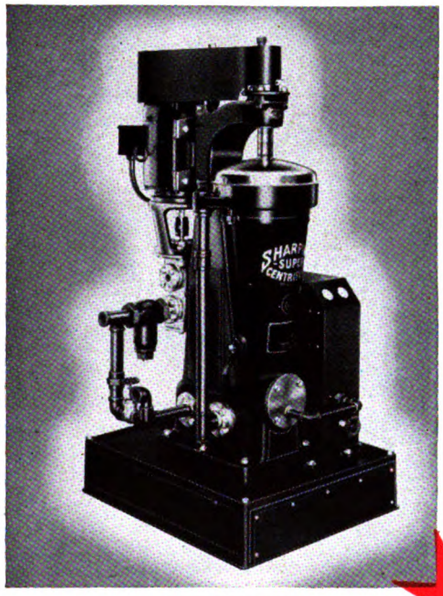
A COMPLETE AND SELF CONTAINED PLANT FOR THE PURIFICATION OF:

★ ***DIESEL FUEL OIL***
★ ***DIESEL LUBRICATING OIL***
★ ***TURBINE LUBRICATING OIL***

Sharples En Bloc centrifuges are complete purifiers. All that is necessary is to connect intake and discharge piping and electrical leads. These extremely efficient purifiers will assure you clean diesel lubricating and fuel oil which meet the drastic requirements set by the U. S. Navy. When installed on turbine lubricating oil they are your best insurance of freedom from water emulsions in the lubricating oil.

TYPE VP

The TYPE VP EN BLOC is indicated where heating of the oil is unnecessary or where heating is to be done by a separate steam heater. The VP En Bloc is complete with motor which drives both the centrifuge and the intake and discharge pumps, motor control, thermometer, pressure gauge, strainer and all integral piping. The VP En Bloc is available in five sizes with capacities up to 450 g.p.h.

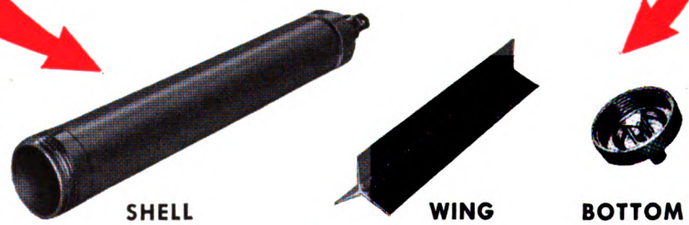


TYPE VPHA

The TYPE VPHA EN BLOC is recommended where it is desirable to heat the oil by means of electric heaters. The electric heaters are built into the units and are equipped with automatic temperature control. One motor drives both the centrifuge and the intake and discharge pumps. This unit is complete with strainer, thermometer, pressure gauge, heaters and all integral piping.

Available in five sizes with capacities up to 450 g.p.h.

All Sharples marine centrifuges are equipped with **Stainless Steel** bowls. High maintenance costs due to corrosion are eliminated. The Sharples bowl consists of only three major pieces—the shell, the wing and the bottom. One man, in less than 15 minutes, can stop—clean these three simple parts—and put the unit back into service.



SHELL WING BOTTOM

The SHARPLES CORPORATION

SHARPLES

NEW YORK 17, N. Y. 501 Fifth Avenue
CHICAGO 4, ILL. 80 E. Jackson Boulevard
BOSTON 10, MASS. 230 Congress Street
SAN FRANCISCO 5, CALIF. 686 Howard Street
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EXECUTIVE OFFICES AND FACTORY, 2300 WESTMORELAND STREET, PHILADELPHIA 40, PENNA.

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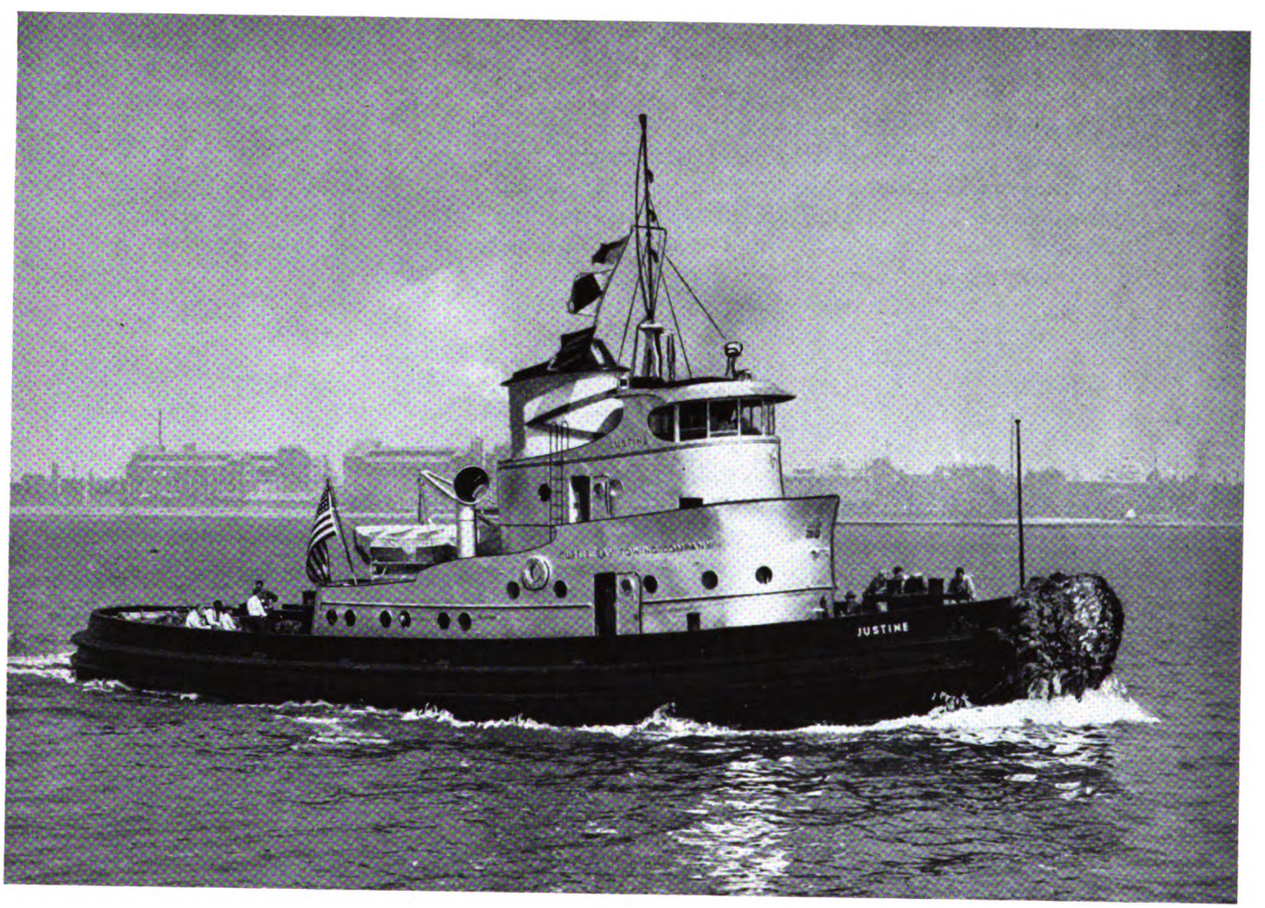
THE CURTIS BAY TOWING Co.

1501 MERCANTILE TRUST BLDG.

BALTIMORE 2, MARYLAND

PHONE: CALVERT 4400 CABLE AND RADIO: "CURTISBACO"



THE CURTIS BAY TOWING Co.

OF PENNSYLVANIA

12 SOUTH TWELFTH ST.

PHILADELPHIA 7, PA.

PHONE: LOMBARD 3-3977 CABLE AND RADIO: "CURTISBACO"

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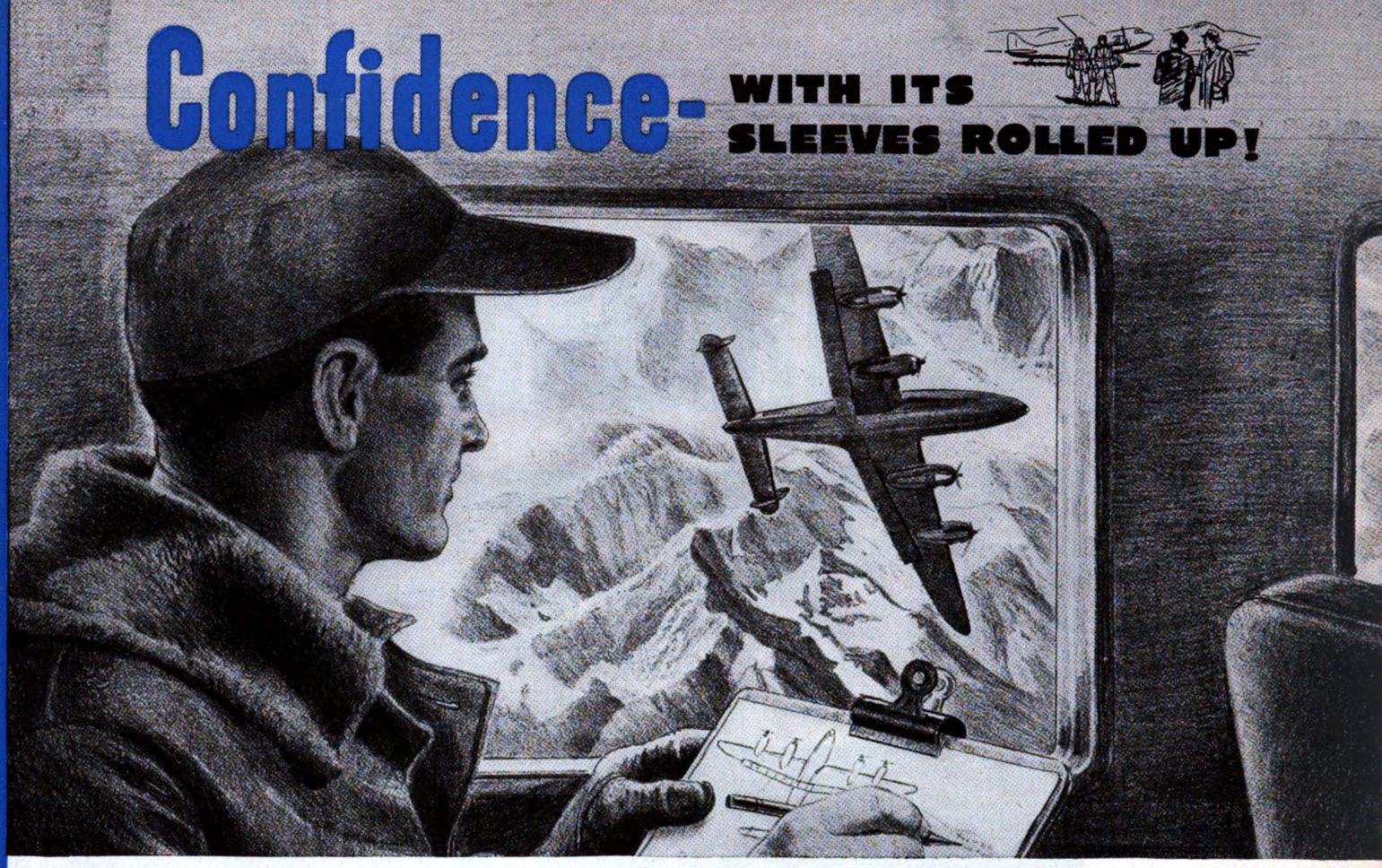
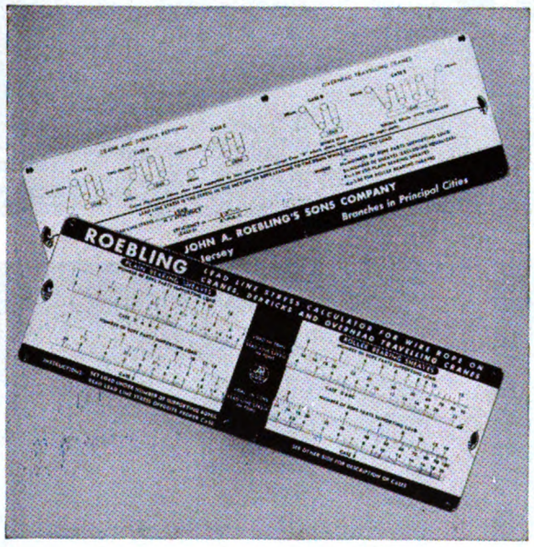
Confidence- WITH ITS SLEEVES ROLLED UP!





YEAR BY YEAR, planes grow bigger . . . faster and safer. Man has unbounded confidence in his ability to build better and better planes. Never satisfied, he experiments and tests tirelessly, and aviation progresses.

With similar vision and confidence, Roebling has been pacemaker in the development and manufacture of products essential to the transportation and other industries. The active, widespread confidence it has won among technical men and operators throughout industry is Roebling's proudest asset. Look to Roebling for continued leadership . . . continual improvement in its products and engineering . . . continual progress.

WHAT SIZE OF ROPE? HERE'S YOUR ANSWER—FREE

DATA used by Roebling engineers themselves are embodied in this unique "slide rule". It's the Roebling Lead Line Stress Calculator for wire rope . . . tells you in a moment the safe and economical size of rope for every load . . . gives the right answer for all types of crane, derrick, and overhead traveling crane installations.

Here's information you can accept and act upon with complete confidence . . . just as you can specify Roebling "Blue Center" Steel Wire Rope for unsurpassed toughness, dependable reserve strength and the reduction of costly replacement shut-downs. Roebling was America's first wire rope maker, and "Blue Center" Steel Wire Rope is the finest that Roebling knows how to make.

Write for a Roebling Lead Line Stress Calculator — it's free. And let your Roebling Field Man tell you about installation and maintenance practices that prolong wire rope life. Call him at your nearest Roebling branch office.

JOHN A. ROEBLING'S SONS COMPANY OF CALIFORNIA

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A CENTURY OF CONFIDENCE ROEBLING

JR ROEBLING

★ *WIRE ROPE AND STRAND* ★ *FITTINGS* ★ *SLINGS* ★ *SUSPENSION BRIDGES AND CABLES* ★ *AIRCORD, AIRCORD TERMINALS AND AIR CONTROLS* ★ *AERIAL WIRE ROPE SYSTEMS* ★ *ELECTRICAL WIRE AND CABLE* ★ *SKI LIFTS* ★ *HARD, ANNEALED OR TEMPERED HIGH AND LOW CARBON FINE AND SPECIALTY WIRE, FLAT WIRE, COLD ROLLED STRIP AND COLD ROLLED SPRING STEEL* ★ *SCREEN, HARDWARE AND INDUSTRIAL WIRE CLOTH* ★ *LAWN MOWERS*

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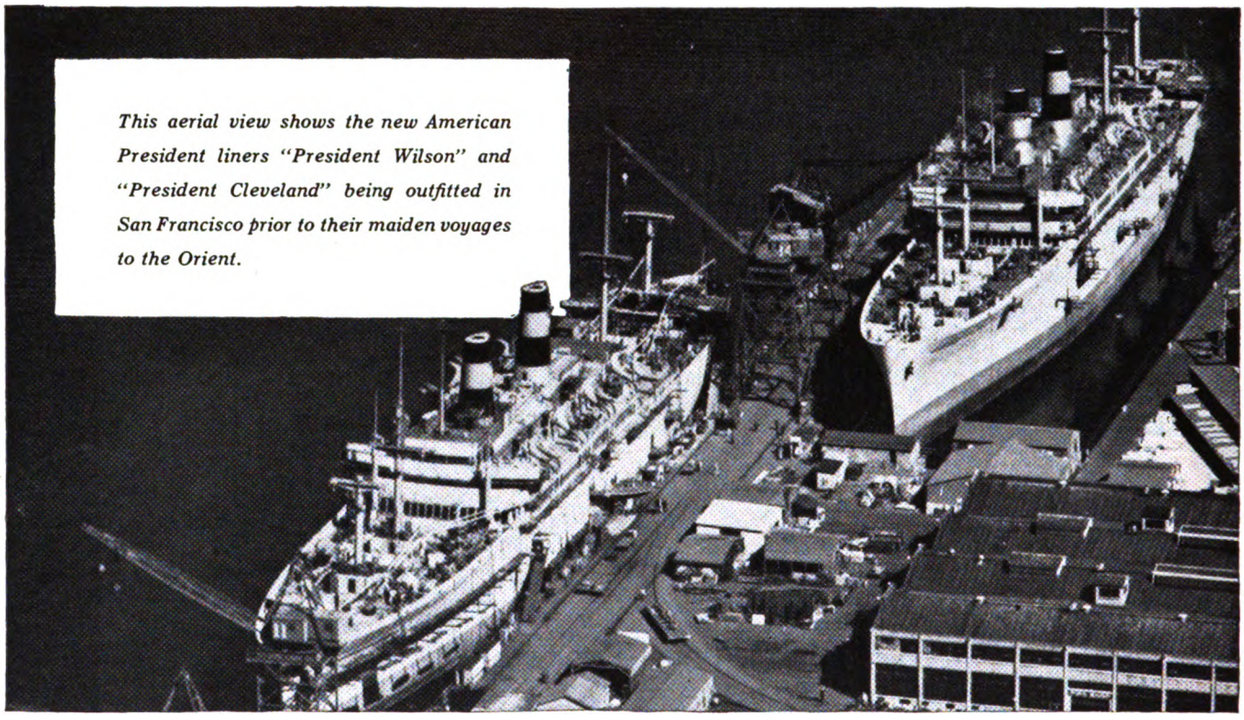
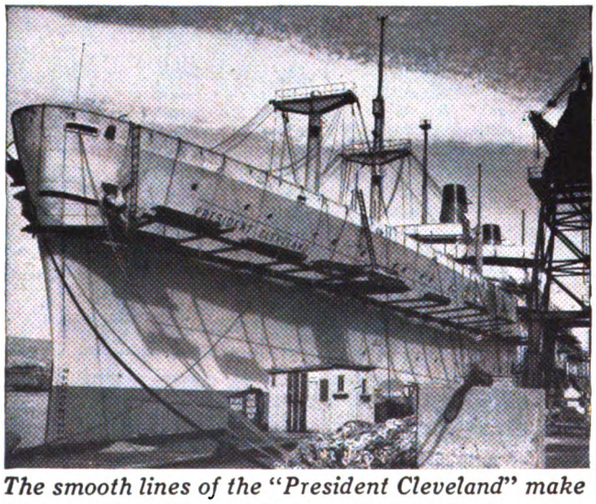
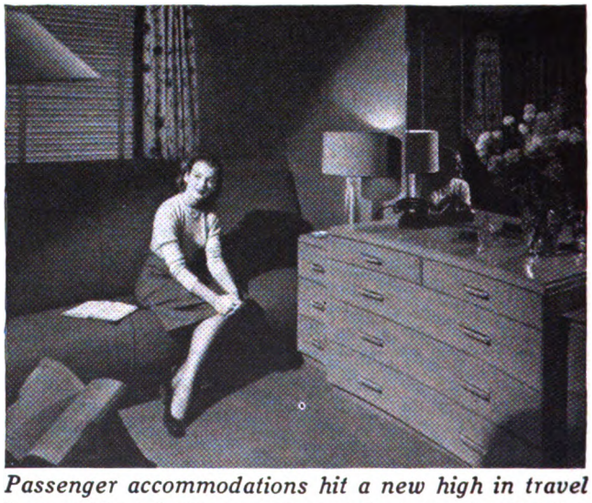
BIGGEST POSTWAR
USE G-E TURBINES



This aerial view shows the new American President liners "President Wilson" and "President Cleveland" being outfitted in San Francisco prior to their maiden voyages to the Orient.



The smooth lines of the "President Cleveland" make her an outstanding addition to the Pacific passenger service. Cruising speed is 19 knots.



Passenger accommodations hit a new high in travel luxury. Electrical auxiliaries supply power for lighting and air conditioning.

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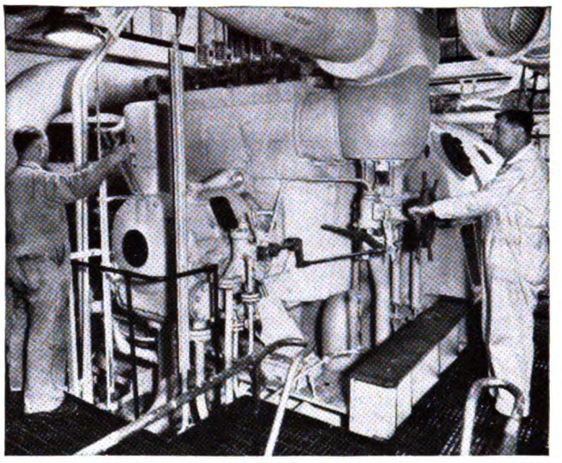
LUXURY LINERS TO "KEEP 'EM SAILING"

American President Liners "Cleveland" and "Wilson" depend upon G-E propulsion equipment to maintain fast sailing schedules

These two latest additions to the postwar fleet of American President Lines embody many "firsts." They are the biggest luxury liners built since the war—610 feet from stem to stern. They set new standards in passenger comfort. But most important, they will be fast, efficient carriers of passenger and cargo.

General Electric "Keep 'em Sailing" engineers supervised installation of this vital equipment. Before the turbines turn over to start these ships on their maiden voyage, service engineers from G-E's San Francisco office carefully check propulsion equipment and electrical auxiliaries. During official dock and sea trials, they make sure that actual performance meets or exceeds builders' specifications. Later these engineers will be available to supervise maintenance and overhaul and to offer the operator the complete facilities of G-E Keep 'em Sailing Service.

With the addition of the "President Cleveland" and the "President Wilson," the list of vessels powered by G-E propulsion equipment becomes even more impressive. This equipment, combined with Keep 'em Sailing Service, has proved itself to operators in terms of faster turn-arounds, less port time, and lower overhead. A G-E marine engineer will be glad to discuss equipment and service with you. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*



One of the two General Electric turbine-generator sets which supply propulsion power for the "President Cleveland" and the "President Wilson." A 10,000 hp synchronous motor is direct-connected to the propeller shaft.

Control of propulsion turbines and motors is centralized at this main control board. Turbine-electric drive permits flexible arrangement of propulsion machinery for greater payload.

KEEP 'EM SAILING SERVICE

General Electric service engineers stand ready to help you on any propulsion or electrical problem. G-E service shop crews operating out of every important port perform regular maintenance on a planned schedule—or handle any emergency repair or replacement job. Send for our new bulletin entitled "When Your Ship Comes In . . .". Address: General Electric Company, Sec. AG-4693, 1 River Road, Schenectady 5, N. Y.

GENERAL ELECTRIC

200-63

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M. J. GIGY & ASSOCIATES

112 Market Street • San Francisco 11, Calif.

Telephone: YUkon 6-2803, YU 6-2031; Night: THornwall 3-4212

are pleased to

ANNOUNCE

their new location and telephone number, calling attention to the following companies and products of which they are direct agency representatives for the Pacific Coast or California:

ALDRICH PUMP COMPANY Allentown, Pennsylvania (California)	**Marine Pumps — ALDRICH-GROFF FEED PUMPS, Evaporator pumps, submersible Bilge Pumps, Self Priming and Non-self Priming.**
M. L. BAYARD & CO., INC. Philadelphia, Penna. (Pacific Coast)	**Cranes, Hoists, Bevel Gears, Operating Gear, Specialty Items**
BEEBE BROS., MANUFACTURERS Seattle, Washington (Northern California)	**"BEEBE" Hoists, Winches (Hand Operated)**
HYDRAULIC SUPPLY MFG. CO. Seattle, Washington (California)	**Metal Hatchboards, W.T. Doors, Steel Booms, Mechanical Lifeboat Davits.**
LAKE SHORE ENGINEERING CO. Iron Mountain and Marquette Michigan (Pacific Coast)	**D.C. Cargo Winches, A.C. and D.C. Topping Winches, A.C. and D.C. "Magi" Winches, "Siporter" (Side PORT loadER), Mining Equipment.**
PIEZO MFG. CORPORATION New York, New York (Pacific Coast)	**Universal Joints, Couplings, Gear Joints (Ball and Socket Type), Deck Boxes, Stuffing Boxes, W.T. Door Operating Gear.**
STRUTHERS WELLS CORP. Titusville, Penna. (Pacific Coast)	**Steering Gears, Anchor Windlasses, Winches, and Capstans.**
THE VAPOR RECOVERY SYSTEMS CO. Compton, California (Northern California)	**"VAREC" Valves, Fittings, Scuppers, Flame Arresters, Manometers, Gas Control and Safety Devices, Inverted Vent Valves.**
TREGONING INDUSTRIES, INC. Seattle, Washington (California)	**Lifeboats, Bouyancy Apparatus.**

They are further pleased to advise that they have available in San Francisco, component and repair parts for considerable of the equipment and firms listed above and are prepared to furnish 24-hour emergency service.

You are assured that your Marine or Industrial engineering and equipment problems will receive prompt, courteous and accurate handling.

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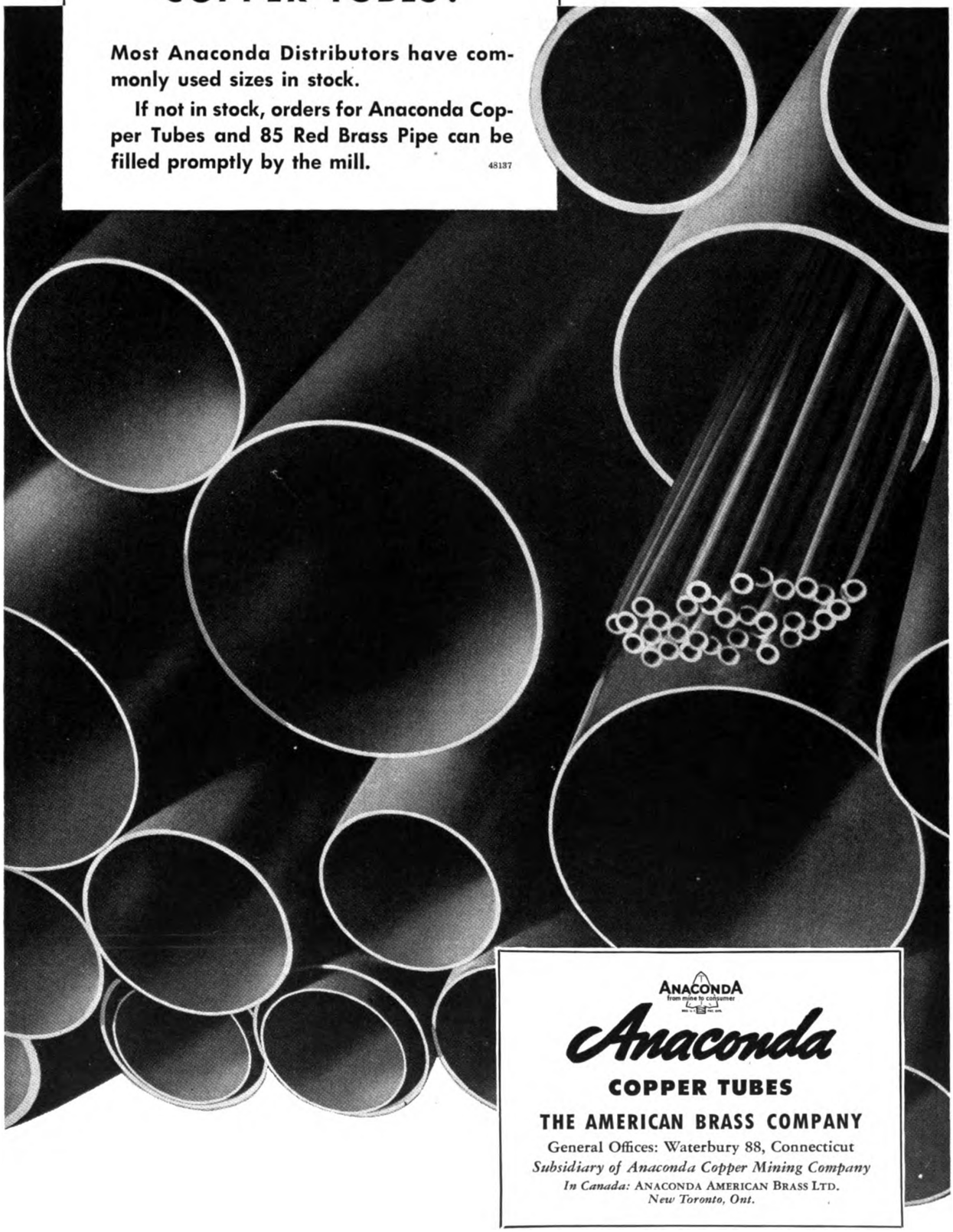
NEED COPPER TUBES?

Most Anaconda Distributors have commonly used sizes in stock.

If not in stock, orders for Anaconda Copper Tubes and 85 Red Brass Pipe can be filled promptly by the mill. 48137



ANACONDA
from mine to consumer

Anaconda

COPPER TUBES

THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS LTD.
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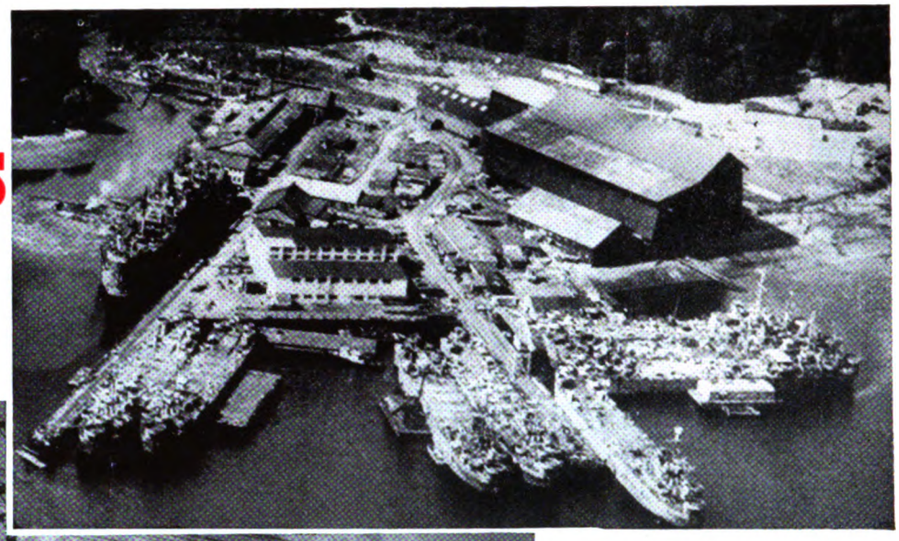
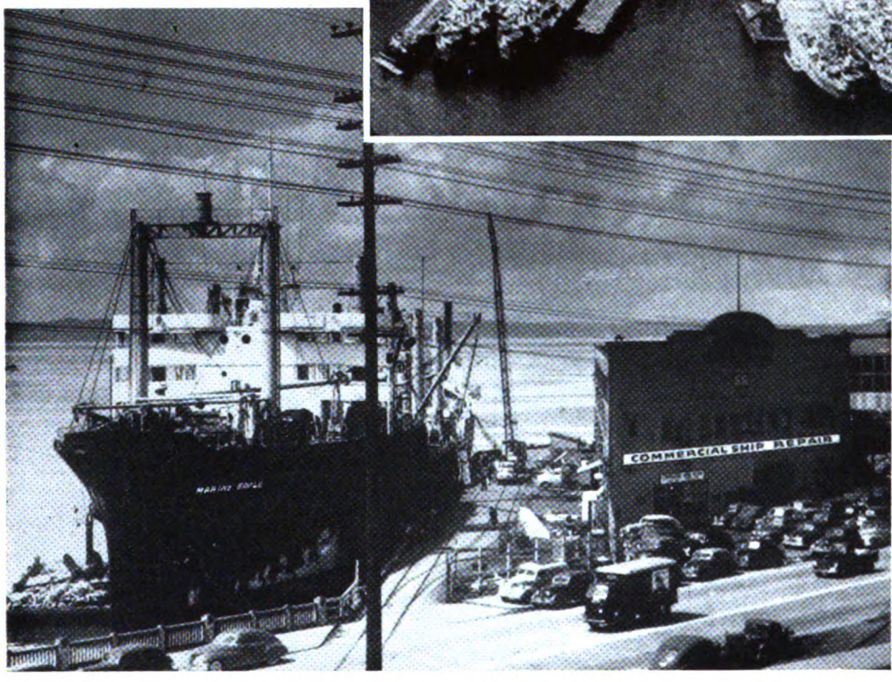
On Puget Sound TWO PLANTS at which to Serve You



Commercial Ship Repair, Winslow



Commercial Ship Repair, Pier 66, Seattle

Drydocking up to 550 Feet and 14,000 Tons

Complete Facilities
for all types of
Repair, Conversion
and
New Construction
on all
Classes of Vessels

24 Hour Service

Bidding on Ships From
Coast to Coast

Repairs at Loading Berth

COMMERCIAL SHIP REPAIR

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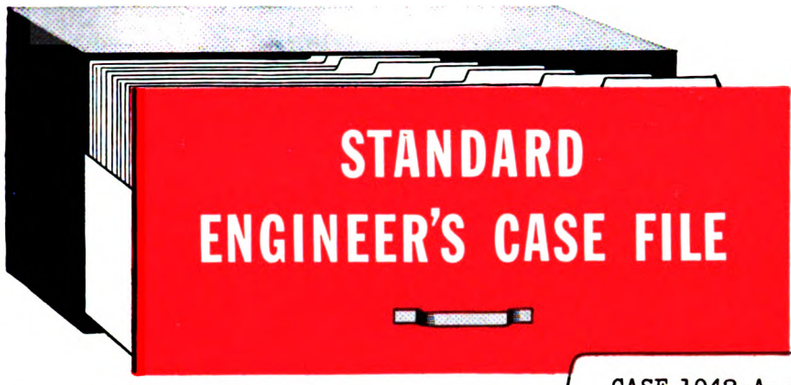
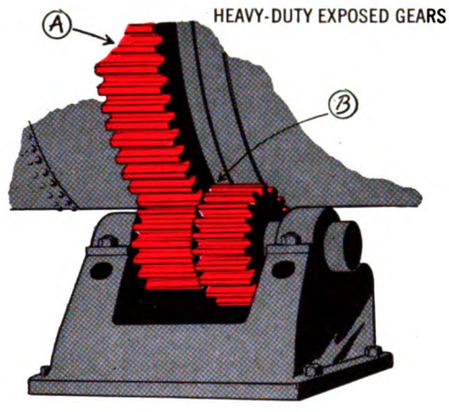


CASE 1042-A--KEEPING GREASE ON HEAVY-DUTY OPEN GEARS.



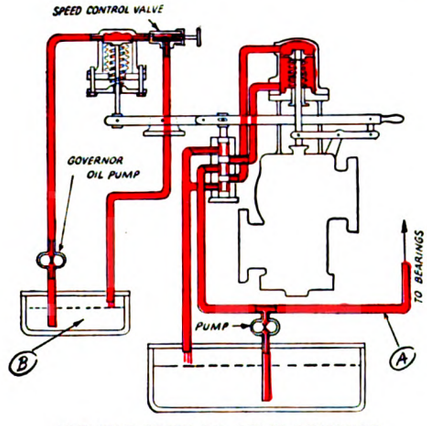
Extremely adhesive Calol Pinion Grease did not drip off a heavily-loaded open gear operating in moderate ambient temperatures. Several grades make it adaptable to both high- and low-speed open gears on hoisting units, cranes and other machines, wire rope, and grease-lubricated enclosed gears where climatic temperatures are low. Comes in four grades which are increasingly more adhesive: 0, 1, 2, 5.

A. Sticks to gear teeth and flows slowly back into place after displacement by pressure ... lack of drippage and waste promotes economy.

B. Tenacious lubricating film cushions shocks ... reduces frictional losses caused by sliding action of gear teeth.

Calol Pinion Grease sometimes requires heating for best application ... apply lightly on wire rope.

CASE 1048—STOPPING RUSTING, LACQUERING, SLUDGING IN STEAM TURBINES.



VARIABLE-SPEED OIL-RELAY GOVERNOR

Charges of inhibited Calol OC Turbine oil in various size turbines gave service many times longer than normally obtained with straight-mineral oils. Use in large and small units ... ring-oilers, circulating oil lubricating systems and oil-actuated governor relay systems. Comes in five grades: 5, 9, 11, 15, 19.

A. Contains highly effective corrosion inhibitor and has excellent metal-wetting ability. Keeps moisture in oil systems from contacting metal.

B. Oxidation inhibitor resists deterioration of oil and sludge formation caused by heat, moisture, air, dirt ... prevents plugging of oil lines.

Calol OC Turbine Oil in regular service showed no increase in acidity after several years ... turbine parts remained in same condition as when installed ... water and solid contaminants separated readily from oil in centrifuging or filtering systems.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

Standard Fuel and Lubricant Engineers are always at your service. They'll gladly give you expert service—make your maintenance job easier. Call your local Standard Representative or write Standard of California, 225 Bush St., San Francisco 20, California.

RPM CALOL

FOR EVERY NEED A STANDARD OF CALIFORNIA JOB-PROVED PRODUCT

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HERCULES EQUIPMENT & RUBBER CO.

Distributors for the Entire Line of the

B. F. GOODRICH COMPANY

HOSE: Water, Fire, Air, Steam, Suction, Brewers, Creamery
HOSE ACCESSORIES: Couplings, Menders, Racks, and Reels
BELTING: Transmission, Conveyor, Canners

PACKING

DURABLA MANUFACTURING CO.—Sheet for Pipe Flanges, Rings, Gaskets, Durabla Pump Valves for All Pumps, including Marine
BELMONT PACKING & RUBBER CO.—Piston and Sheet Packing
Q-P Self-Setting Piston Packing for Regular and Special Pumps

FIRE EXTINGUISHERS — SODA AND ACID, FOAM, CARBON TETRACHLORIDE, CO-2 and RECHARGES

INDIAN FIRE PUMPS

MANUFACTURERS & DISTRIBUTORS OF
GASKETS—Asbestos, Fibre, Rubber, Cork, Felt, Paper, Leather, Synthetic, All Metals, United States Gaskets, etc.
MOLDED GOODS—LATHE CUT GOODS—PRINTING ROLLERS—SPONGE RUBBER
SHEET AND STRIP RUBBER PACKING—VALVES—LABORATORY STOPPERS and TUBING, Etc.—
SYNTHETIC RUBBER—NEOPRENE and THIOKOL

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Our Gasket Shop, which has the largest and best-equipped plant on the Pacific Coast for the Manufacture of all types of Gaskets, has, to complete its line, taken the Pacific Coast Distributorship of

THE CHARDON RUBBER CO., CHARDON, OHIO
which produces a complete line of

DRUM HEAD GASKETS
EXTRUDED RUBBER SPECIALTIES
MOLDED RUBBER GOODS
RUBBER WASHERS
RUBBER WEATHER STRIP FOR CAR WINDOWS
REFRIGERATOR RUBBER STRIP AND PARTS
WASHING MACHINE GASKETS, ETC.

WE REQUEST YOUR INQUIRIES

HERCULES

Equipment & Rubber Co., Inc.

MANUFACTURING DIVISIONS

THE GASKET SHOP — STANDARD RUBBER COMPANY, Inc.

435 Brannan Street, San Francisco 7, Calif. — Telephone YUkon 6-2770

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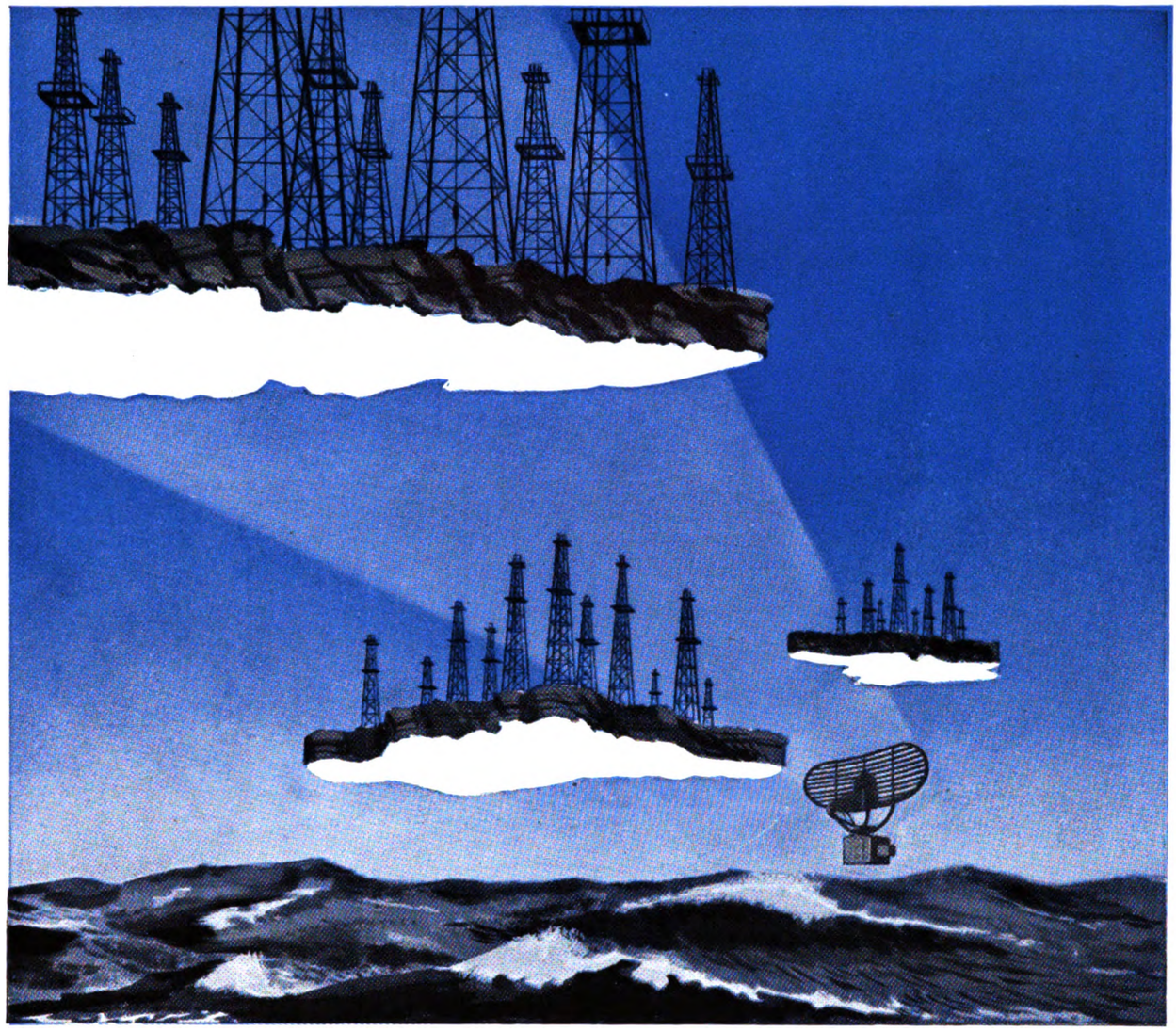

Oil moves on a RADAR beam...

■ Speeding oil from the fields to Esso refineries is *another* new job for Sperry radar. Today's high-speed tankers literally move on a radar beam that *sees* through mist and fog . . . all to help get cargos delivered safely and on time.

■ In equipping twenty-one 16,600 ton tankers of the ESSO PARKERSBURG class with Sperry radar, Standard Oil Company (New Jersey) is taking another step in its billion-dollar expansion program . . . a program designed to help meet the demands of industry, national defense, agriculture, homes and transportation for more and more oil.

■ Sperry radar helps an ESSO PARKERSBURG class tanker move 138,355 barrels of oil with a minimum of delay—despite weather conditions. By meeting estimated arrival times, discharging facilities can be scheduled to provide the shortest possible "turnaround" time.

■ Shipmasters find that Sperry radar complements their officers' skill in open water . . . their pilots' skill in close-harbor operation. Sperry's 12-inch scope and various range scales provide sharper, clearer "high resolution" indications of every detail far at sea or close to shore.

■ These and other features are backed by Sperry service facilities. Our Marine Department will gladly tell you about them.

SPERRY GYROSCOPE COMPANY

DIVISION OF THE SPERRY CORPORATION • GREAT NECK, N.Y.

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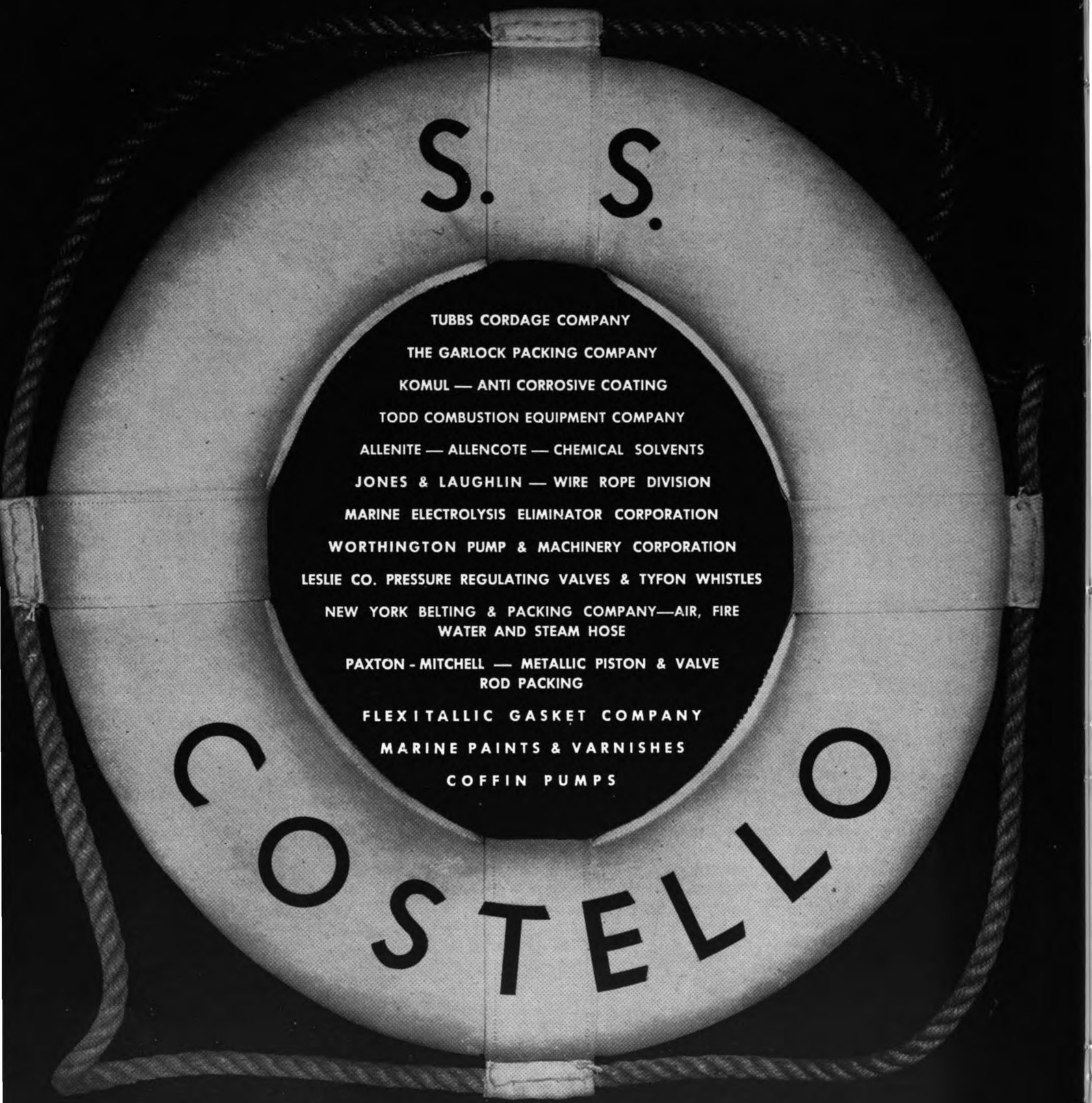

J. M. COSTELLO SUPPLY COMPANY

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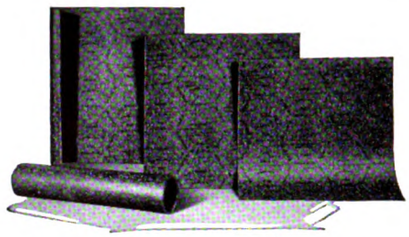
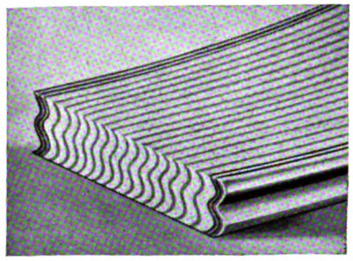
GARLOCK

Packings and Gaskets for Every Marine Service

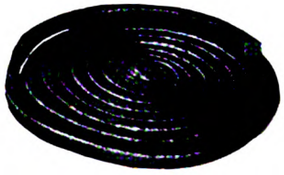


GARLOCK 7021 COMPRESSED ASBESTOS SHEET —gasketing material for hot oils and steam.

GARLOCK LATTICE-BRAID PACKING (Patented) unique structural design imparts semi-automatic pressure action. GARLOCK 740 and GARLOCK 745 Lattice-Braid are particularly recommended for stern gland service.



GARLOCK GUARDIAN* GASKETS (Cross-section view)—constructed of metal and asbestos. Rugged and resilient.



GARLOCK 90 HYDRAULIC PACKING—made of long fibre flax for heavy duty.

Marine Field Sales Representatives:

J. M. COSTELLO SUPPLY CO.

221 N. Avalon Blvd.
Wilmington, California

GARLOCK 234—square braided asbestos packing for rotary or centrifugal pumps.

THE GARLOCK PACKING COMPANY

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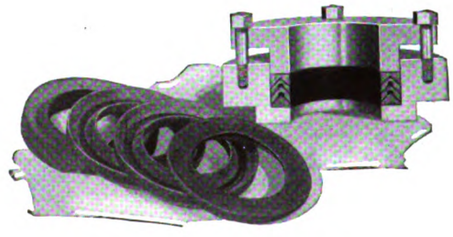
Los Angeles 21, Cal.

930 Bryant St.
San Francisco 3, Cal.

418 Southwest 1st Ave.
Portland 4, Oregon

516 First Ave., South
Seattle 4, Washington

GARLOCK 377 "METALMARINE" PACKING—for general steam engine service, particularly recommended for main engines on steamships and deck engines.



GARLOCK CHEVRON* PACKING — Specify Garlock 430 Chevron for hydraulic service; 530 for high temperatures; 431 for cold oils; 531 for hot oils.

*Reg. U.S. Pat. Off.

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MARSOL*

THE above equipment in addition to floating equipment has been made available to assist steamship operators in quick turn-arounds. "MARSOL" is a service—not a package product. "MARSOL" engineers are always available for consultation and estimates.

MARINE SOLVENTS SERVICE CORPORATION

214 N. Marine Ave. **Wilmington, Calif.**

TErminal 43438

*Trade Mark Reg.

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"I'm fed up with failures . . . from now on, we're replacing with Monel"

Are repeated parts failures getting you down?

Are you concerned about heavy maintenance costs and time lost because of frequent repairs? If so, Monel* replacement parts will often hold a happy solution.

For Monel is stronger than structural steel! It resists salt-water corrosion. It fights abrasion and steam erosion. And, it *never* rusts.

Right now, manufacturers are able to furnish Monel replacement parts for many marine engines, pumps and other units.

If they cannot fill your order immediately the next best thing to do is to *make* the parts you need from Monel sheet or rod . . . right in your own repair shop.

Many MONEL parts readily made

You can make Monel valve discs, seats, and stems. You can produce pump rods . . . whistle parts . . . deck-winch and windlass parts . . . emergency bolt replacements. You can replace dingy galley counter tops and trim with shining, easy-to-clean Monel.

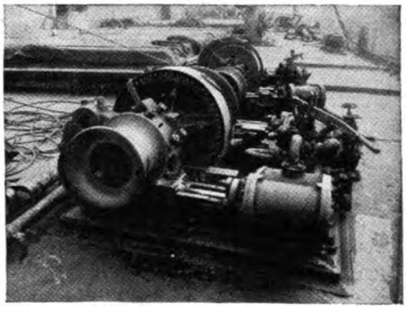
For, tough and strong as Monel is, you'll find it easy and economical to fabricate. The rod can be readily machined and threaded. The sheet can be formed, back-seamed, and joined by soldering, brazing and welding.

MONEL stock immediately available

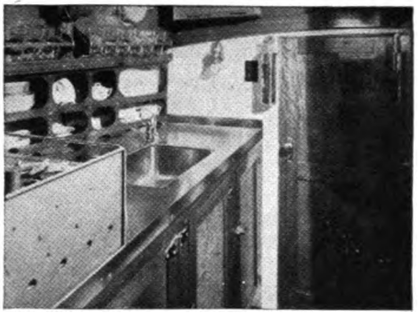
You can obtain rod and sheet overnight from your nearest distributor of Monel in almost all wanted sizes and quantities.

These distributors also carry ample stocks of Seagoin' Monel fastenings.

Many engineers find it a mighty worthwhile economy to make replacement parts of Monel whenever possible. Check up on *your* present stock of Monel sheet and rod . . . and order the sizes you need TODAY!



Here's an example of how Monel parts can "take it." This winch made by Hyde Windlass Co., Bath, Me., is equipped with Monel steam piston rods, slide valve rods and throttle valve stems. For 20 years these parts have stayed on the job . . . despite corrosive salt spray and constant heavy service.



In the galley, Monel keeps counters and work surfaces bright and shining. Monel takes hard knocks. It's rustproof . . . corrosion resistant . . . easy to clean.

NI-ROD also saves minutes and money. For repairing iron castings, be sure to use NI-ROD . . . the smooth-handling electrode. Deposits are sound, strong, and machinable. Include a 5-pound package of NI-ROD in your Monel order.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK 5, N.Y.

Monel* EMBLEM OF SERVICE INCO TRADE MARK

"...It's the SEAGOIN' metal"*

*Reg. U. S. Pat. Off.

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SPEED — the "*KEY*" for new streamlined ships; *Speed* is also the key for shipbuilding and repair. C. W. Marwedel insures *speed* through selling tools and supplies that meet the demands of *action* in modern industry.

"A Leader for Over 75 Years"

C. W. MARWEDEL

ESTABLISHED 1872

SAN FRANCISCO — 1235 MISSION ST. OAKLAND — 11th & ALICE STS.

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THE *Original* DUAL FUEL OIL TREATMENT

L·S·O
TRADE MARK

Liquid SOOTOUT

T. M. REG. U. S. PAT. OFF.

CONSTANT *Cleaning Action* FROM TANK TO STACK

MORE and more steamship companies are adopting the use of Liquid SOOTOUT. This popularity is due to its outstanding results.

Along the waterfront and in the main offices, chiefs, port engineers as well as main office executives, are hearing the name Liquid SOOTOUT— L-S-O; its top performance is making it a topic of conversation.

Liquid SOOTOUT—L-S-O, is the successor to the old-type powder fuel oil treatments and sludge solvents. Liquid SOOTOUT is different as it provides DOUBLE CLEANING ACTION FROM TANK TO STACK, with less cost and less labor.

Ask the man who is using it.

FOR TANK—Liquid SOOTOUT is a concentrated chemical liquid which, when applied to fuel oil in proper proportions, disperses condensation, also sludge forming elements, and reduces strainer, preheater, and nozzle maintenance.

FOR FIRESIDE—Liquid SOOTOUT removes carbon scale and slag in combustion areas, economizers and superheaters. It produces an effective and continuous cleaning action from tank to stack with fuel as burned.

Warehouse Stocks Available At

Baltimore, Maryland	The Terminal Warehouse Co.	New Orleans, Louisiana	Douglas Public Service Corp.
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Brooklyn, New York	Lehigh Warehouse Corp. of Brooklyn	Philadelphia, Pa.	Terminal Warehouse Co.
Brownsville, Texas	Coast Iron & Machine Works	Portland, Maine	Galt Block Warehouse Co.
Corpus Christi, Texas	Coast Iron & Machine Works	Portland, Oregon	Colonial Warehouse & Transfer Co.
Galveston, Texas	Galveston Survey Agency	San Francisco, Calif.	San Francisco Warehouse Co.
Houston, Texas	Universal Terminal Warehouse Co.	Seattle, Washington	Eyres Transfer & Warehouse Co.
Jacksonville, Florida	Peninsula Warehouse Co.	Vancouver, B.C.	H. A. Borgerson, Ltd.
Los Angeles, California	J. A. Clark Warehouse Co.	Wilmington, Calif.	Wilmington Engineering Service Co.

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NEW CONSTRUCTION

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Quick Opening

Watertight

HATCH COVERS

Save costly days in port due to time spent opening and closing hatchcovers each morning and night.

Save on costly damage in storms because Seaboard Mege Quick-opening Hatchcovers are rain tight in 2 to 3 minutes.

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ROLLING BEAM ASSEMBLIES
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Pacific Coast Representative: CONSOLIDATED SERVICES, INC.

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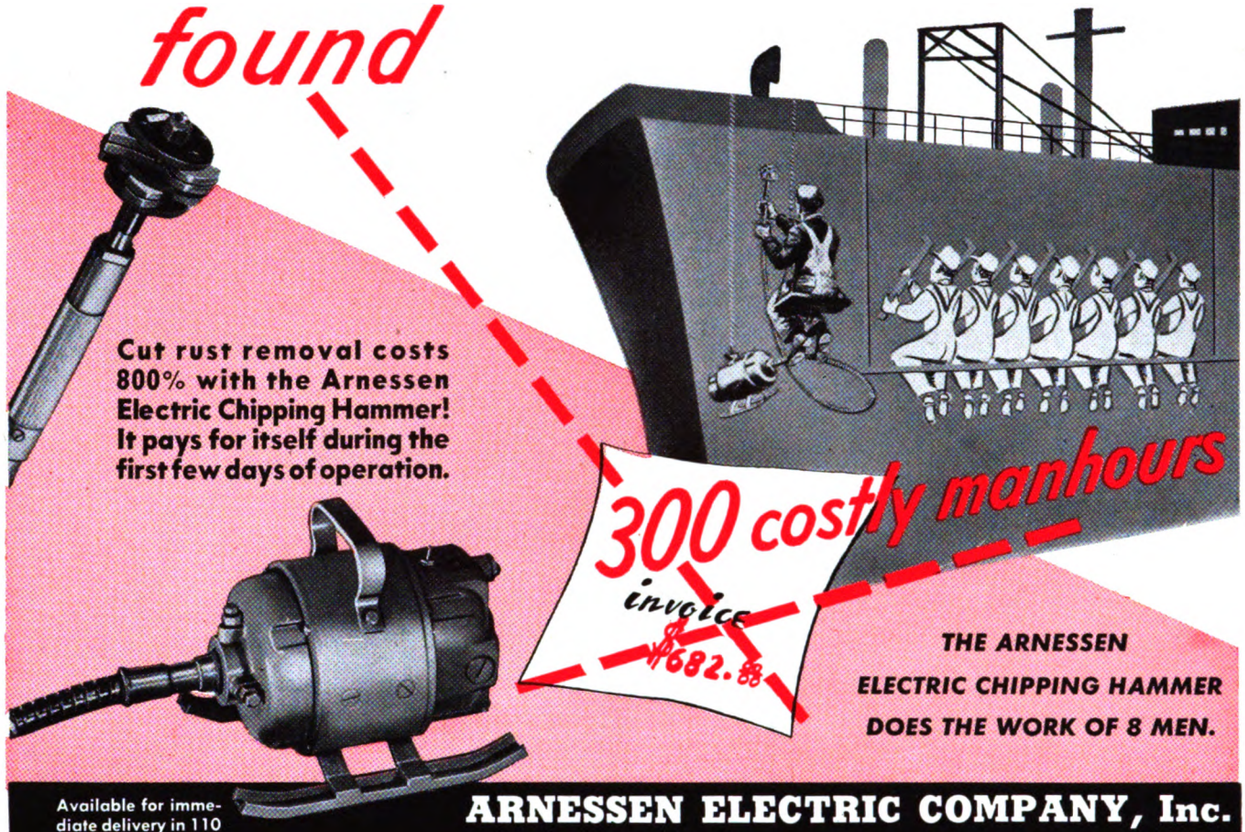

Cut rust removal costs 800% with the Arnessen Electric Chipping Hammer! It pays for itself during the first few days of operation.

300 costly manhours

invoice $682.88

THE ARNESSEN ELECTRIC CHIPPING HAMMER DOES THE WORK OF 8 MEN.

Available for immediate delivery in 110 and 220 volts D.C.

ARNESSEN ELECTRIC COMPANY, Inc.
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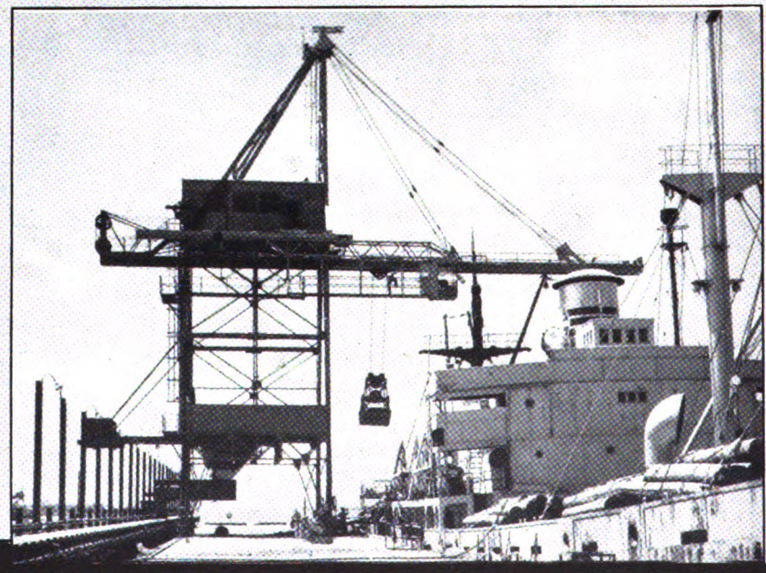
COLBY

A FAMOUS NAME IN CRANES

The crane shown at the right was recently installed on a large dock on the Mississippi River and is a fast handling grab-bucket unloader of twelve tons capacity. A similar crane was recently completed in the San Francisco Bay area.

•

We are builders of fast handling cargo cranes, hammerhead cranes, etc. Distance from our head office means nothing to us.



COLBY STEEL AND ENGINEERING COMPANY

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Affiliated Companies: PRESCOTT IRON WORKS, AMERICAN FOUNDRY CO., Seattle.

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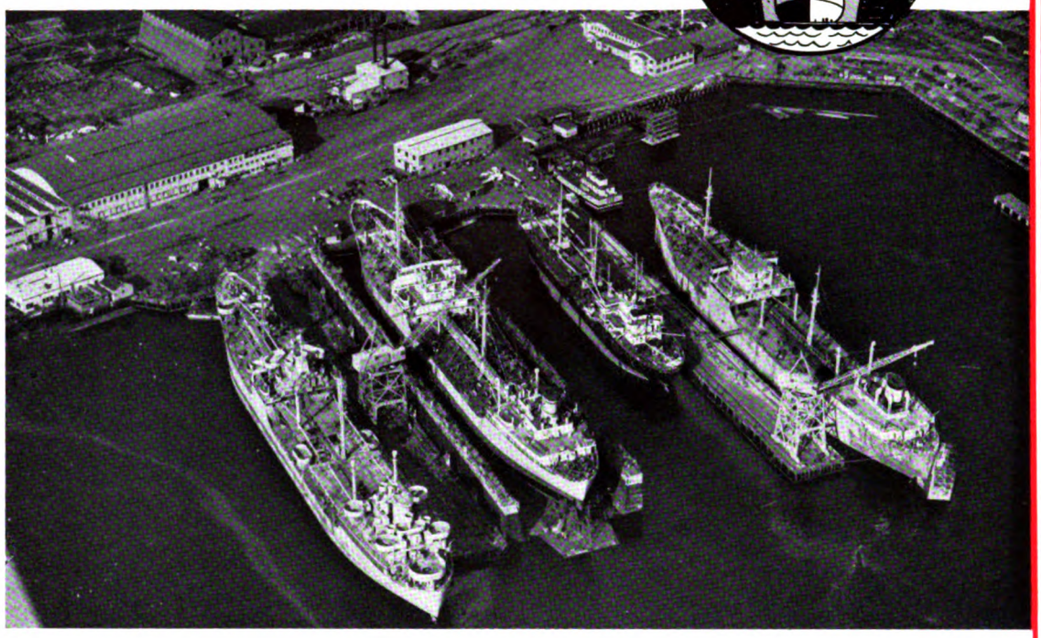

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PRECISION PERFORMANCE ON EVERY JOB
MODERN SHOPS . . . MODERN METHODS
10,500 Ton Dry Dock - Deep Water Piers

EVERETT PACIFIC
SHIPBUILDING AND DRY DOCK COMPANY
EVERETT, WASHINGTON, U. S. A.

ON PUGET SOUND

CABLE ADDRESS - "EVPAC," Everett, Wash.

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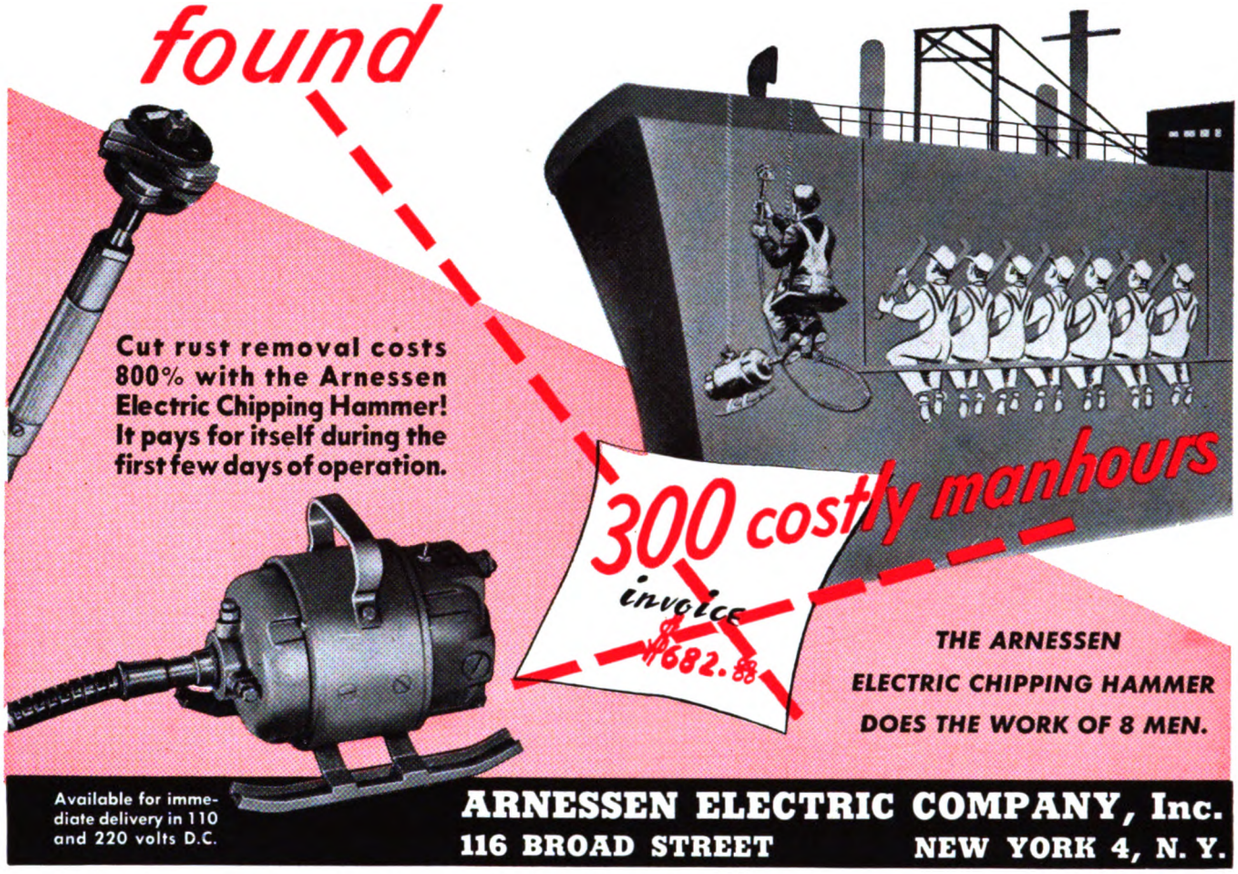

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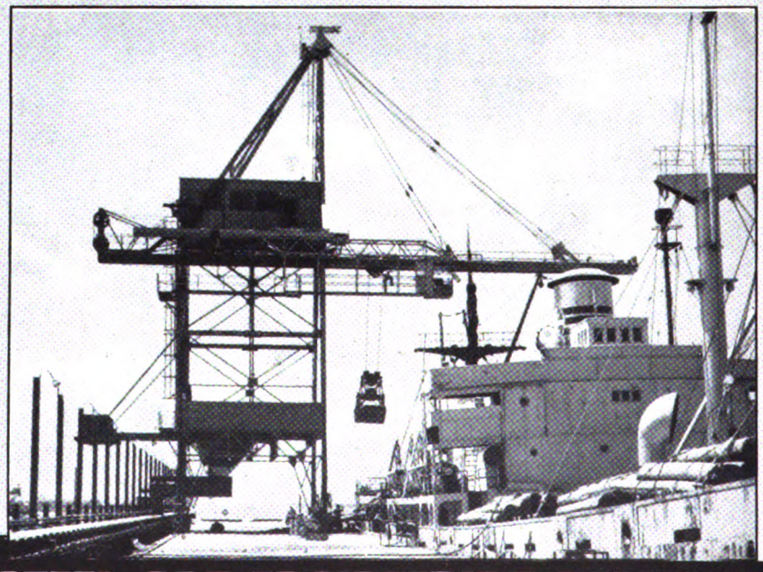

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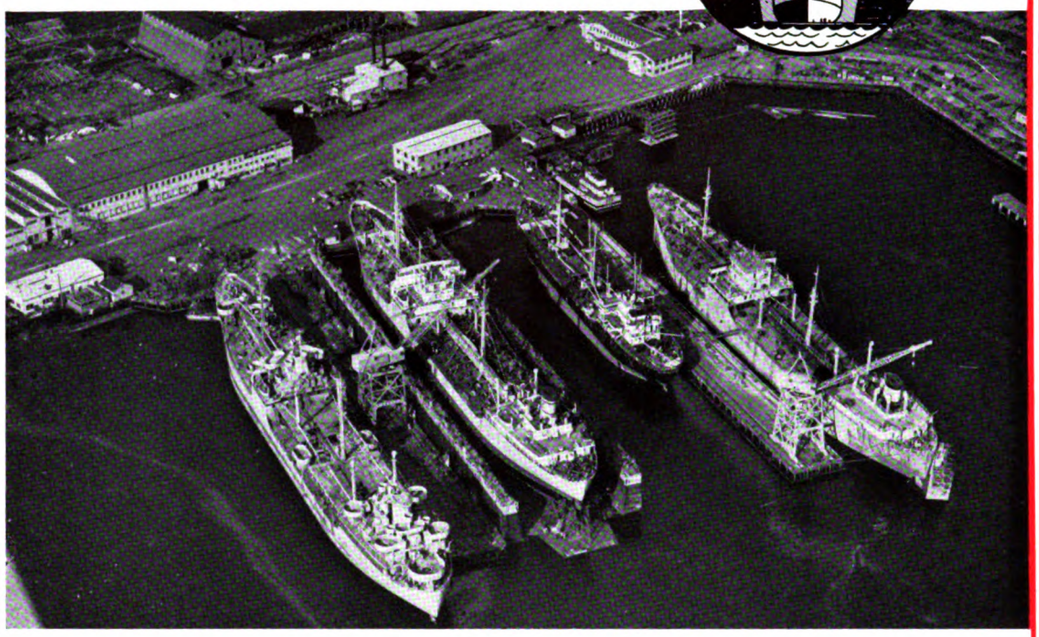

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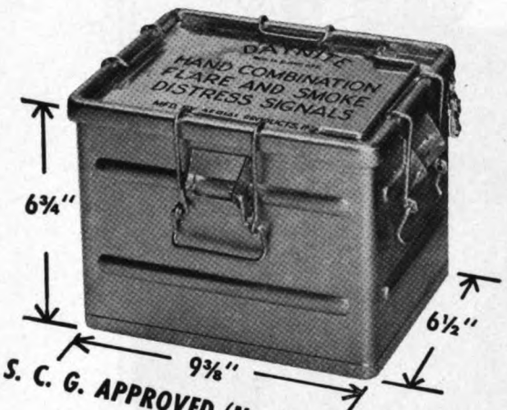
Equipping to Meet New Coast Guard Regulations?

EFFECTIVE JAN. 1, 1949



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PAPER WRAPPED FIREWORKS TYPE WOODEN-STICK FLARES & SMOKE POTS

Remember

DAYNITE DISTRESS SIGNALS

REG. U. S. PAT. OFF.

SMOKE FLARE

Save Stowage Space

(Above left) Close up ¾ actual size shows compactness of DAYNITE—only 5⅛" long, weight less than 7 oz. (Right) Watertight brass container of 12 DAYNITE SIGNALS showing careful packaging and snap-closure rubber-gasketed cover.

It's unbelievable—*but true.*

Twelve DAYNITE DISTRESS SIGNALS *(combining* 12 flares *and* 12 smoke signals) occupy less than one-fifth the space required to stow 12 wooden-stick, fireworks-type flares and 4 bulky smoke pots!

Thus, DAYNITE DISTRESS SIGNALS provide one and one-half times the protection in one-fifth the space!

And remember . . . each individual signal is itself absolutely watertight. Each signal — flare or smoke — will burn under water. Once ignited, it cannot be extinguished by wind or waves.

High visibility—compactness—lightweight—dependability—are additional reasons why DAYNITE DISTRESS SIGNALS have become the world-wide standard.

STOCKED BY SHIP CHANDLERS AT ALL PORTS

AERIAL PRODUCTS, Inc.

ELKTON, MARYLAND

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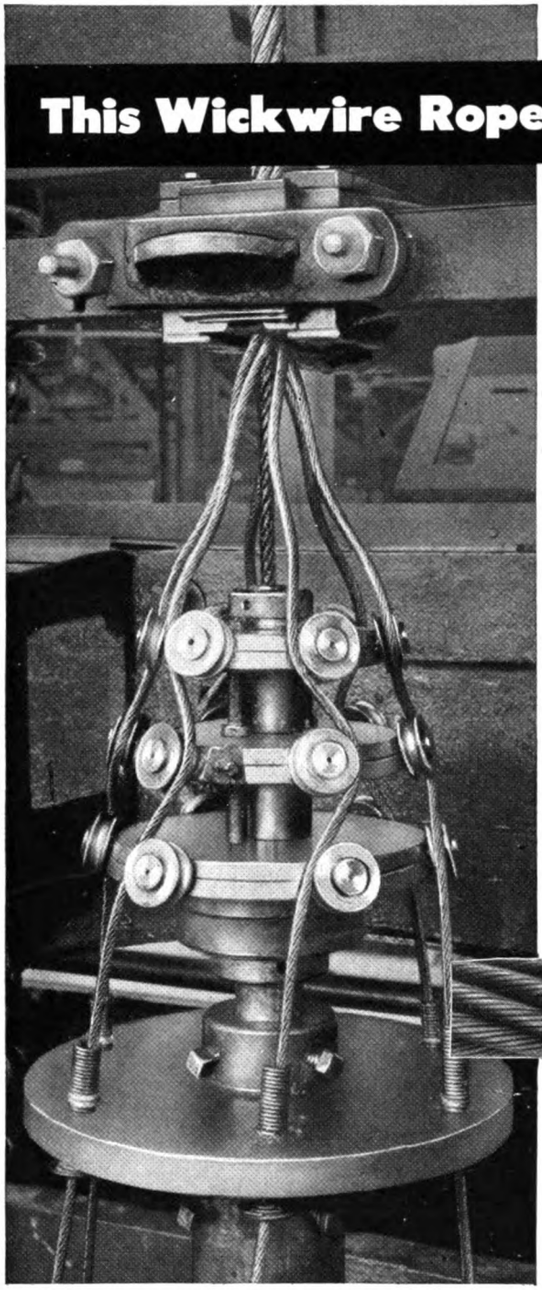
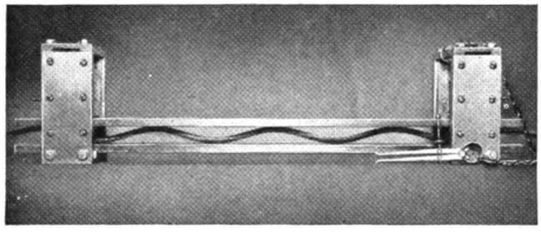
This Wickwire Rope Gets a Permanent Wave





Passing strands of Wickwire Rope through a special roller head causes them to set in a wave-like pattern. The result is WISSCOLAY *Pre*formed—a rope that not only lasts longer than non-preformed rope, but is kink-resistant; easier to cut, splice and install, and safer to handle.

Before any order of WISSCOLAY *Pre*formed is run off, samples are subjected to several tests—most important of which is the Strand Helix Test. Individual strands are placed between the plates of the testing apparatus and checked with a micrometer. These tests are made by inspectors whose approval demands that the helix diameter be controlled within the closest of tolerances in meeting the specified standard.

This and countless other tough tests, coupled with over 125 years of wire-working know-how, make Wickwire Rope the logical choice of rope users who demand the utmost in performance, safety and long life.

Wickwire Distributors and Wire Rope Engineers in key cities everywhere are ready to help solve your wire rope problems and to provide prompt delivery of the rope you need. Wickwire Rope is available in all sizes and constructions—both regular lay and WISSCOLAY *Pre*formed.

THIS 82-PAGE BOOK ON WIRE ROPE IS FREE. WRITE FOR YOUR COPY TODAY!

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write—Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Massachusetts.

WICKWIRE ROPE

CF&I & SUBSIDIARIES

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. **EXECUTIVE OFFICE—500 Fifth Avenue, New York 18, N. Y.**

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TODD *expands Pacific service*

... WITH PLANTS AT SAN FRANCISCO

25 ACRE ALAMEDA SHIPYARD and SAN FRANCISCO FACILITIES ACQUIRED BY TODD

WITH THE ADDITION of this modernly equipped yard, formerly operated by the United Engineering Company, Todd now offers operators efficient repair, overhaul and conversion facilities at three Pacific ports — Seattle, San Francisco and Los Angeles.

The new Todd yard has four piers, totalling 1,914 feet; a 1,560-foot wharf; 2 dry docks of 10,500 and 14,000 tons capacity; industrial buildings with a full complement of shops, warehouses and offices.

Large cargo and passenger vessels can be drydocked at Alameda — including the P-2 type — as well as standard tankers and the new tankers planned by private companies and governmental agencies.

Todd will also operate Pier 36, and shops at Beale Street, San Francisco, for repair work not requiring drydocking. Mobile service will be available to vessels berthed elsewhere in the San Francisco area or at anchor.

The new San Francisco facilities raise the chain of Todd yards to nine—eight on the Pacific, Gulf and Atlantic coasts of the United States and one at Barranquilla, Colombia, South America.

TODD

PACIFIC SHIPYARDS CORPORATION

486 CALIFORNIA STREET, SAN FRANCISCO 4

Todd Yards conveniently located on Atlantic, Gulf and Pacific Coasts

NEW YORK • BROOKLYN • HOBOKEN • CHARLESTON, S.C. • NEW ORLEANS
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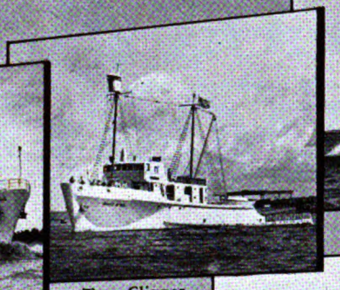
Leaders in every field of Marine Service depend on ENTERPRISE POWER

Cargo Ship *Angele Higgins*

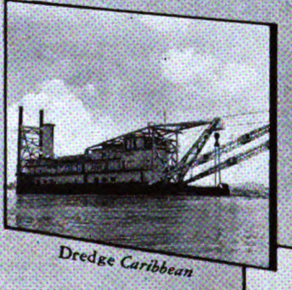


Tuna Clipper *White Star*

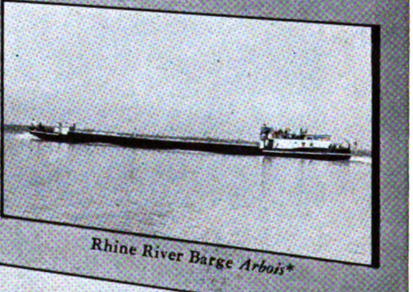
Dragger *Barbara C. Angell*

Ferry Boat *Galveston*

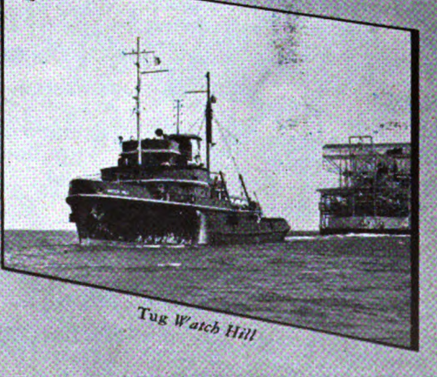
China Seiner *Los Angeles*



Dredge *Caribbean*

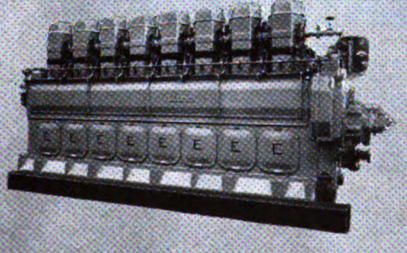


Rhine River Barge *Arbois**



Tug *Watch Hill*

ENTERPRISE DIESELS
Choice of Power Experts



ENTERPRISE ENGINE AND FOUNDRY CO.
18th & Florida Sts. San Francisco 10, Calif.

CHICAGO	WASHINGTON, D. C.	NEW ORLEANS	TULSA
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*Photo courtesy Ingalls Shipbuilding Corp.

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Coffin Turbo Pumps

For boiler pressures to 850 pounds

Marine Feed Pumps with . . .

No interstage leakage.

No destructive casing erosion-corrosion.

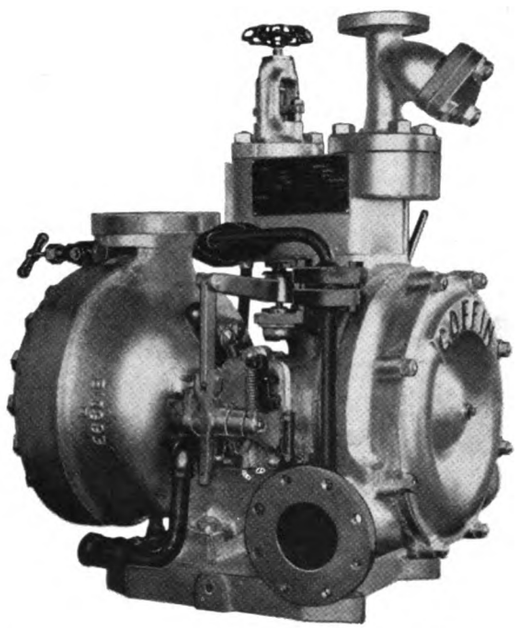
Wide range sensitive pressure governing.

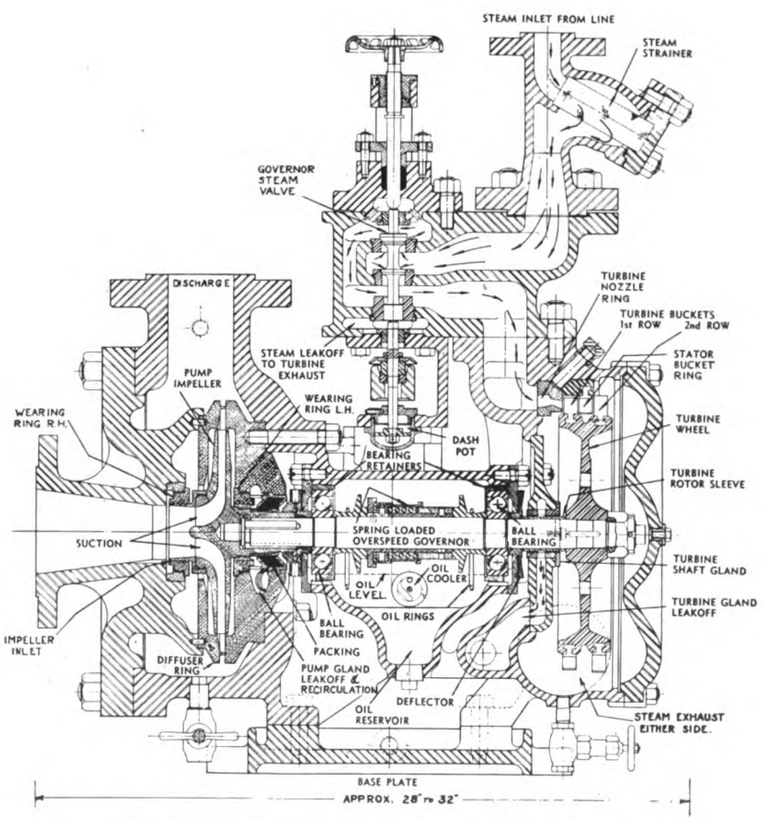
Matched pump, turbine, and governors; one responsibility.

Interchangeable parts, continuously available.

Small size, weight, steam consumption, maintenance.

Literature on request. Specific proposal submitted on receipt of operating data or name of vessel.





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INDUSTRIAL RAILROAD COFFIN MARINE PRODUCTS

Founded 1925

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IMPORTERS *and* EXPORTERS

this Vital News
is for YOU!

FOREIGN TRADE ZONE NO. 3
PORT OF SAN FRANCISCO

is now in Operation

You will want to be fully informed of the benefits of this new addition to the harbor's facilities, and you may look for 100% cooperation from the Board of State Harbor Commissioners for San Francisco Harbor. Descriptive folder, which outlines World Traders' privileges, advantages, and permissible operations in the Foreign Trade Zone, also tariff of storage and handling charges, are yours for the asking.

CLIP AND MAIL THIS COUPON TODAY!

SUPERINTENDENT, Foreign Trade Zone No. 3,
Pier 45, Shed B, San Francisco 11, Calif., U. S. A.
Please mail Folder ☐ Tariff ☐ Both ☐.

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TITLE OR CO._____

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...since the white ships came...

Starting nearly half a century ago to sail to Caribbean ports for tropical fruits, the ships of the Great White Fleet began to serve the mutually beneficial trade between Middle and North America.

To coordinate cargo movements efficiently the United Fruit Company pioneered the first ship-to-shore radio in the Caribbean—known today as Tropical Radio Telegraph Company.

Passenger traffic as well as cargoes steadily increased—citizens of Middle and North America both, learning to know each other better.

Agricultural experiments with such new crops as abaca (manila hemp), the insecticide, rotenone, and African palm oil are progressing. Today these new crops, as well as the traditional nutritious foods of Middle America — bananas, cocoa, coffee, sugar — form part of the cargoes continually moving north, while—southbound—the Great White Fleet carries the products of northern farms and factories.

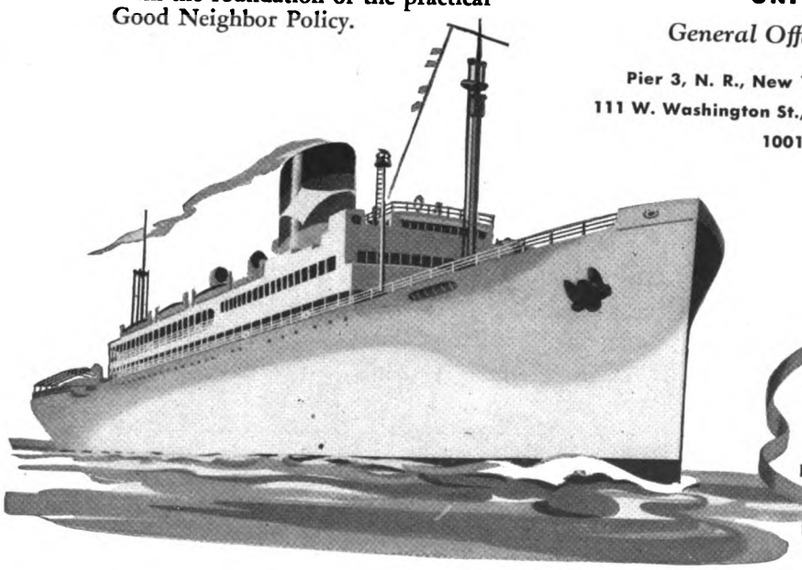
Harbinger of all this was the first white ship that sailed so long ago . . . and of much more, too . . . of the growing understanding and friendship between the Americas. The day by day contacts of thousands of individuals form the foundation of the practical Good Neighbor Policy.

GREAT WHITE FLEET

UNITED FRUIT COMPANY

General Offices: 1 Federal Street, Boston 10

Pier 3, N. R., New York 6 — 1514 K St. N. W., Washington 5
111 W. Washington St., Chicago 2 — 321 St. Charles St., New Orleans 4
1001 Fourth St., San Francisco 7



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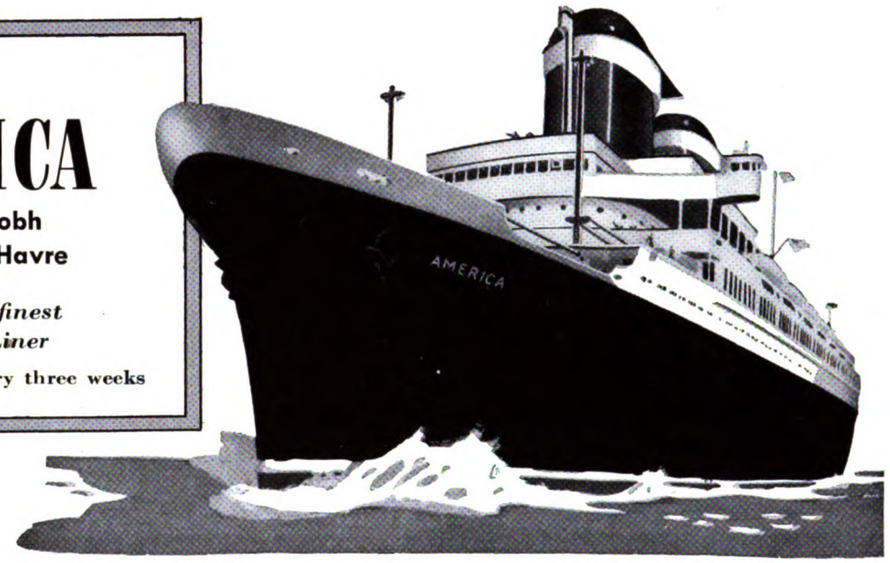
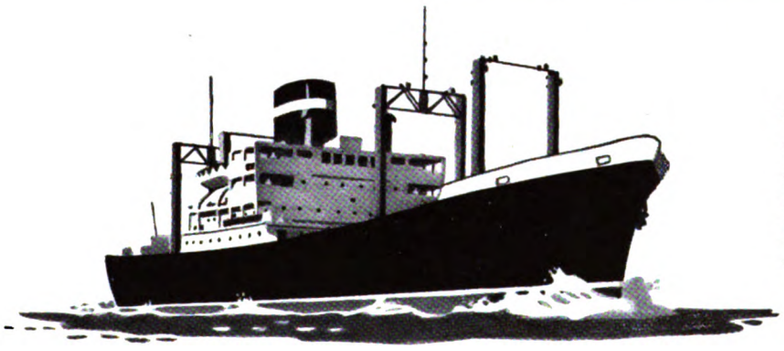
UNITS OF SEAPOWER

FOR THIS COUNTRY, the S. S. AMERICA is more than a fine luxury passenger liner—the most beautiful today on the North Atlantic. It is the flagship of our merchant fleet—a most necessary weapon in a sound defense.

Passenger liners and cargo vessels as well as battleships are units of a nation's seapower. America's strength on the seas is dependent upon a strong merchant marine auxiliary as well as a strong Navy.

S. S.
AMERICA
New York · Cobh
Southampton · Havre
★
Largest, fastest, finest American-flag Liner
Sailings approximately every three weeks





46 United States Lines company-owned cargo vessels link American Atlantic Ports and Ports in Ireland, the United Kingdom and continental Europe—also, the Far East and Australia. The company also operates a number of chartered vessels.

Helping to Keep America Strong on the Seas

UNITED STATES LINES COMPANY
ONE BROADWAY, NEW YORK 4, N.Y.
Offices throughout the World in Principal Cities

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ALCOA *sails the* CARIBBEAN

American businessmen often see only the picturesque and romantic beauty of the Caribbean. But beneath its lush, tropical exterior are thriving, worthwhile markets for thousands of products made in the U. S. A. How are they paid for? With exports of bauxite, sugar, cocoa, petroleum and scores of other basic products we need. Serving the freight and travel needs of this growing area is a day in, day out job for the many ships of Alcoa's busy fleet. Alcoa Steamship Company, Inc., 17 Battery Place, New York 4, N. Y. or One Canal Street, New Orleans 16, La.

ALCOA STEAMSHIP COMPANY, INC.

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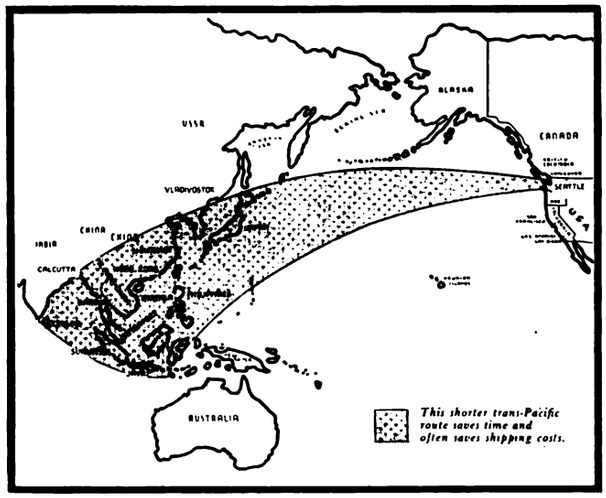
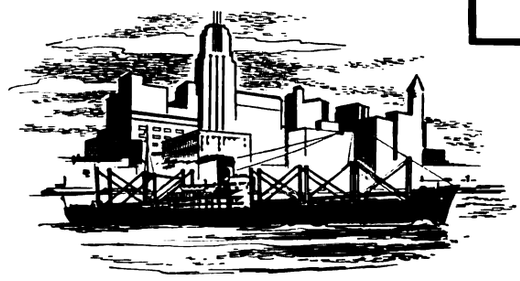
WHERE EAST MEETS WEST

ON OR ABOUT JULY 1 American Mail Line moves Seattle port operations to its large new, modern terminal—Pier 88—providing ships and shippers the last word in services, facilities and conveniences unsurpassed anywhere on the Coast, befitting the excellent standards of American Mail Line efficiency backed by 97 years experience and national and international goodwill built by constant adherence to principles of perfection.

Now serving the entire Far East... Japan, China, Hong Kong, Singapore, Philippines, Dutch East Indies, Malaya, Siam, Burma, Ceylon, Calcutta, Bay of Bengal. Some ships of this fast fleet discharge cargo at Pacific ports from Los Angeles north to Vancouver on return trips.





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Speed... all 9 Ships... 16 knots

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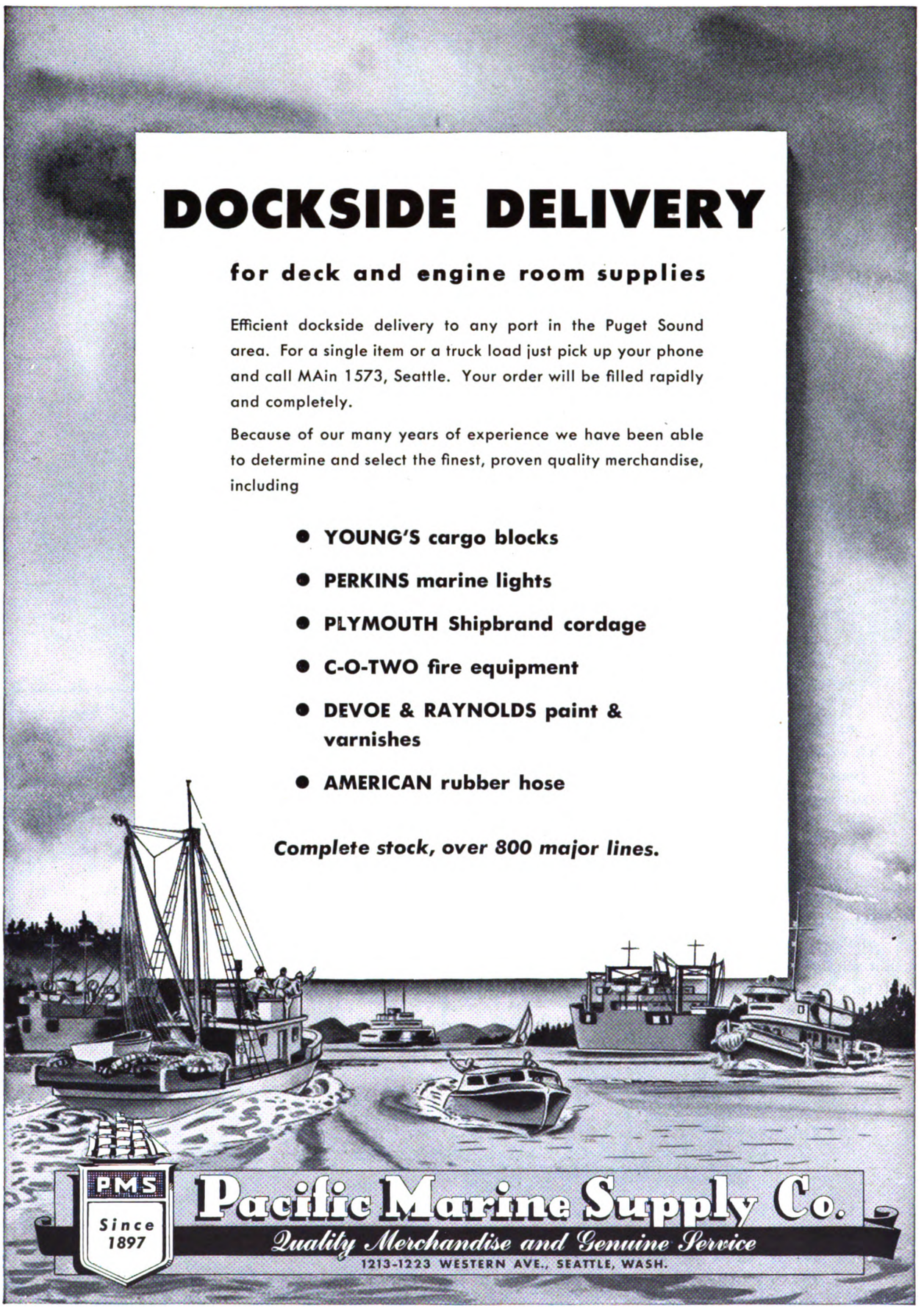

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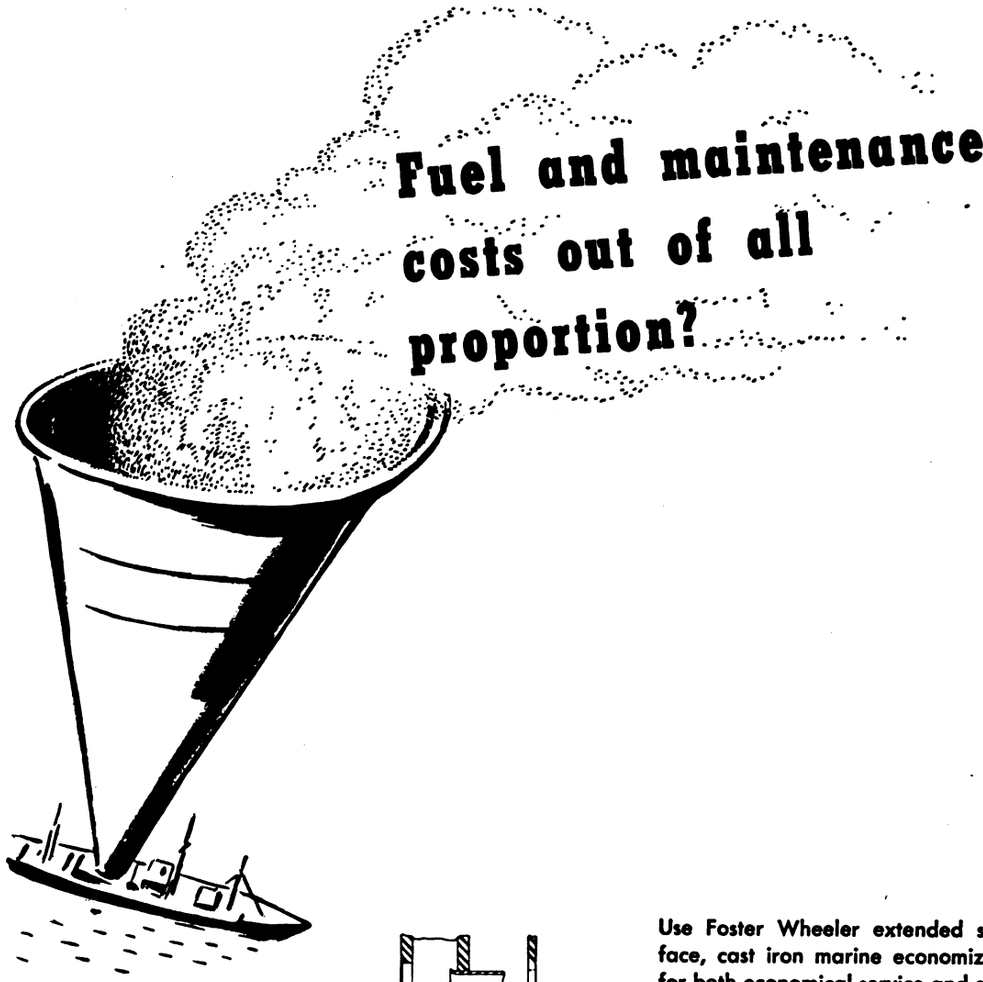
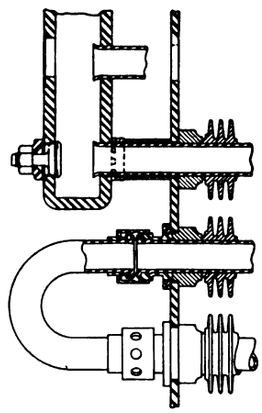


Fuel and maintenance costs out of all proportion?



Use Foster Wheeler extended surface, cast iron marine economizers for both economical service and efficient power generation.

Efficiency of steam generation is increased by as much as 10% by recovering heat from flue gases.

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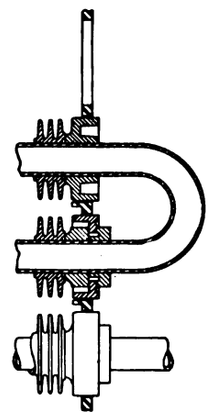

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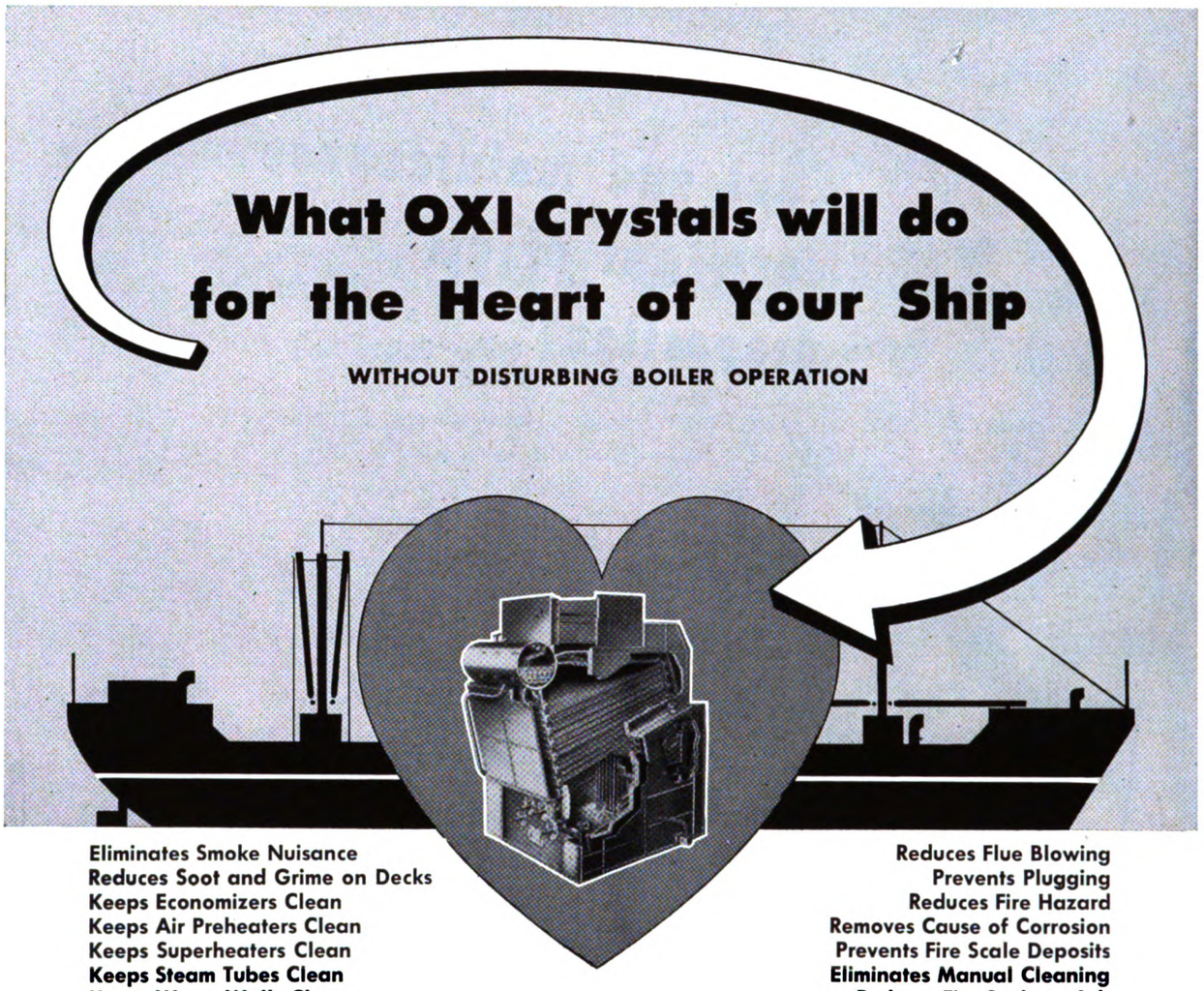

Eliminates Smoke Nuisance
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Keeps Air Preheaters Clean
Keeps Superheaters Clean
Keeps Steam Tubes Clean
Keeps Water Walls Clean

Reduces Flue Blowing
Prevents Plugging
Reduces Fire Hazard
Removes Cause of Corrosion
Prevents Fire Scale Deposits
Eliminates Manual Cleaning
Reduces Fire Scale to Ash

CHEMICALLY CLEANS THE ENTIRE FIRESIDE OF BOILERS

FREE OXI SERVICE

At your request and without cost or obligation, one of our qualified trained engineers will inspect your boilers when in port, and submit to you a written report regarding the results that can be obtained with the Oxi Chemical Process. He will make the initial application and instruct your operating engineers in the most effective method to get maximum results in your boiler. He will then inspect your boilers periodically and submit reports of progress.

Consult an Oxi Field Engineer—now available at major ports—or write our General Office for further information.

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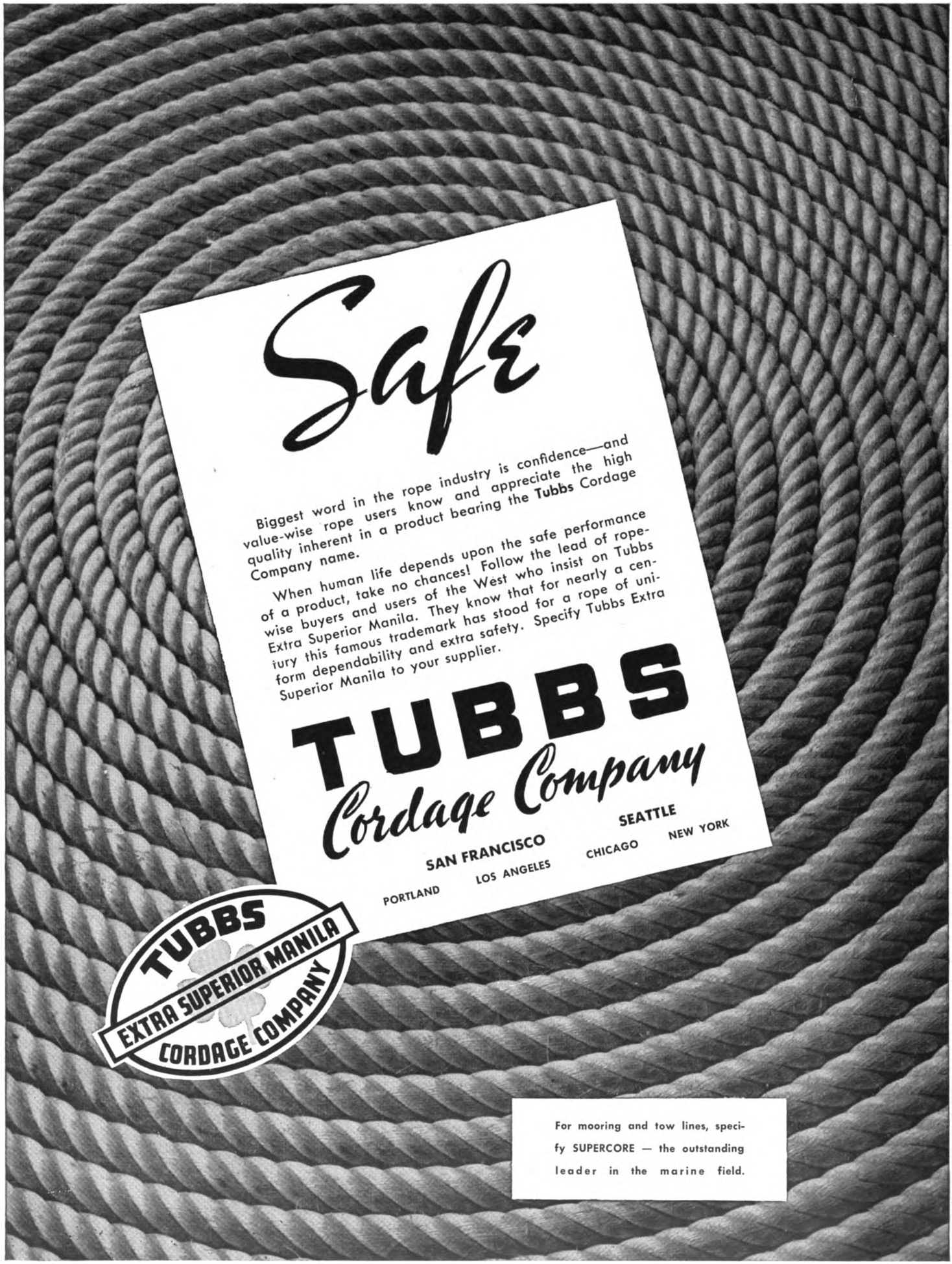

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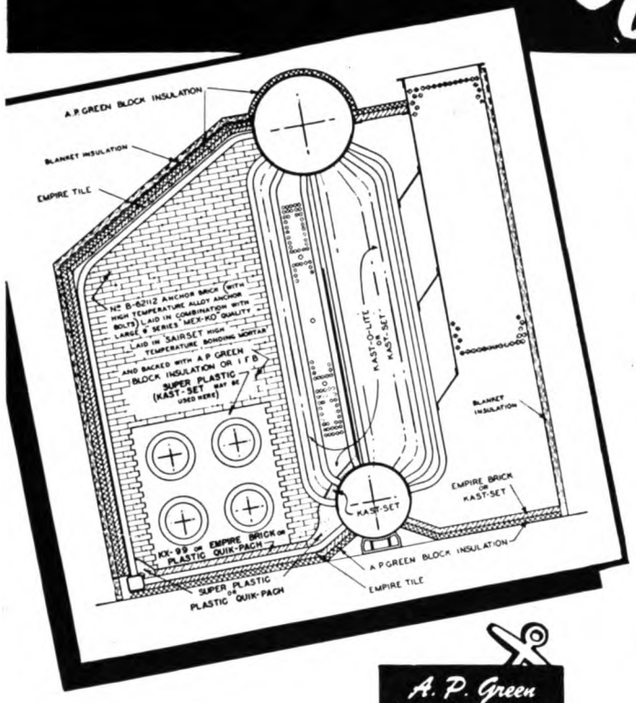

A. P. Green REFRACTORY PRODUCTS FOR MARINE SERVICE

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The A. P. Green Fire Brick Company manufactures a complete line of high-quality fire-clay refractories. Unbiased installation recommendations can be made. These materials have been MARINE tested and proved in thousands of boilers in many types of ships. A. P. Green Refractories are unsurpassed in their ability to withstand severe marine service.

Established for over 37 years, the A. P. Green Company has served the Marine Industry from stocks located in every major port. Prompt, complete service is ensured wherever your ship might be.

Call your A. P. Green distributor—he is listed in the classified telephone directory—and let him assist you with your marine refractory problems.

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A high alumina brick resistant to spalling and slagging. Has high refractoriness and hot-load bearing strength.

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A super duty fire-clay brick with great spalling resistance, permanent volume, high load bearing strength and high refractoriness. For installations where severe spalling and vitrification conditions are present.

KX-99 FIREBRICK
A special super duty fire-clay brick having low porosity, resistance to slag attack, load bearing strength and high refractoriness. Especially suited for Marine boiler floor construction.

EMPIRE FIREBRICK
A high heat duty firebrick produced entirely from Missouri fire clay. Dense structure, permanent volume, spalling resistance and high load bearing strength make them outstanding.

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A wet, air-setting, high temperature mortar that bonds firebrick together into a strong unit. Withstands any temperature where fire-clay brick is applicable. Free from service shrinkage.

KD-2 MORTAR
A dry, air-setting, high temperature bonding mortar. Excellent working properties—will not deteriorate in storage. For use in any temperature range where fire-clay brick are applicable.

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Super duty firebrick in plastic form for service where conditions are too severe for high heat duty materials. For complete monolithic linings, burner openings and repairs.

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A high heat duty firebrick in plastic form. High fusion point—very resistant to spalling—minimum service shrinkage—easy to install. For complete linings and repairs.

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A hydraulic-setting refractory castable. No shrinkage at temperatures up to 2750° F. When installed it is not affected by steam or water which may come in contact with it.

KAST-O-LITE
A light weight insulating refractory castable. Combines insulating properties and mechanical strength with the advantages of monolithic construction. For temperatures up to 2500° F.

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A high quality, slag wool base, insulating block. Stable at all temperatures up to 1700° F. Low thermal conductivity, high refractoriness, chemical and physical stability and resistance to water are combined features.

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A. P. Green Insulating Firebrick have high insulating properties—and great structural strength. For use up to 2300° and 2600° F. respectively where insulating firebrick are required.

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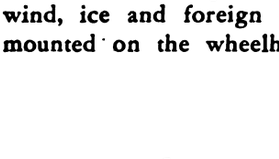
1 **RELIABLE COLLISION PROTECTION**—Westinghouse Marine Radar offers the finest degree of bearing and range resolution available . . . made possible by a narrower radar beam (2°) and a shorter pulse (.3 microsecond). These most important features enable Westinghouse Marine Radar to separate obstacles lying close together . . . potential collision hazards. A multi-position "Sea Return Suppressor" minimizes reflections from heavy rains and high seas . . . so that obstructions in the surrounding area can be seen with maximum clarity, as shown in this scope view of Chesapeake Bay near Bodkin Point.

2 **FINER HARBOR NAVIGATION**—This narrower radar beam and shorter pulse give you the finer, more accurate scope picture you need in crowded harbors . . . notice in this radar view of Norfolk Harbor. Note how the radar has picked up the tug and tow just past ship's position marked by white dot at scope center. The high definition scope gives you a choice of four range scales—1½, 4, 16 and 40 miles and permits you to follow targets from extreme range down to 80 yards.

3 **EASIER OPERATION**—The automatic gain and focus controls . . . exclusive with Westinghouse . . . assure you the clearest scope picture obtainable. This automatic gain control gives optimum target presentation from both strong, near-by objects and weaker, distant objects. The focus control keeps the picture at uniform focus at all times and under all conditions . . . with virtually no effort on the part of the operator.

4 **GREATER INSTALLATION FLEXIBILITY**—Only Westinghouse offers a completely self-contained, self-supporting antenna installation . . . a real economy on vessels adaptable to this type of arrangement. The radome-enclosed antenna—protected from weather, wind, ice and foreign objects—may be mounted on the wheelhouse (as shown here) as an integral unit. This type of mounting keeps installation costs at a minimum. Or, if conditions require it, the antenna can be mounted on the masthead and the transmitter placed in the most convenient location. Power source can be either a-c or d-c, and power consumption is less than 1 kw at 115 volts. J-02136



PLUS **THE FASTEST SERVICE IN THE MARINE INDUSTRY!**—The Westinghouse Merchant Marine Service Plan offers a nationwide, co-ordinated service and repair system . . . Port Engineers in 11 major U. S. ports; Maintenance and Repair Plants in 15 ports; Marine Warehouses in 6 ports . . . instant, unfailing help when you need it, where you need it! Additional foreign servicing facilities are available.

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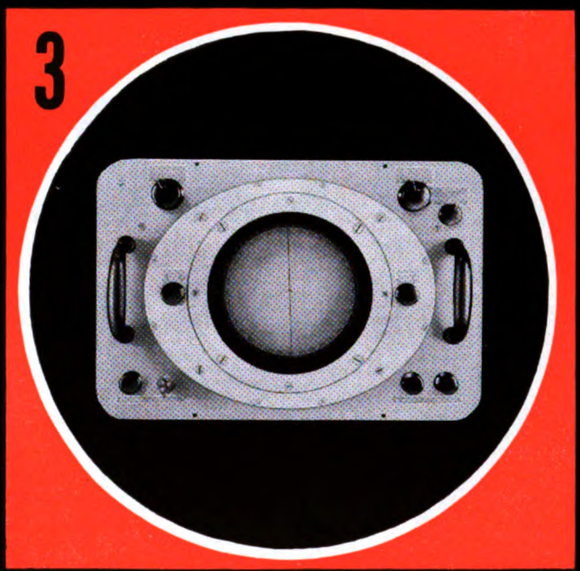

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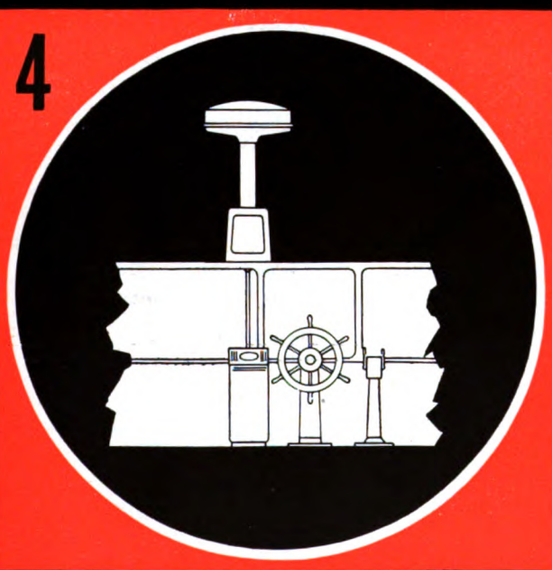

Complete information is available in booklets B-3845A and DB-82-710. Ask your nearest Westinghouse office for copies, or write directly to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

Westinghouse MARINE RADAR

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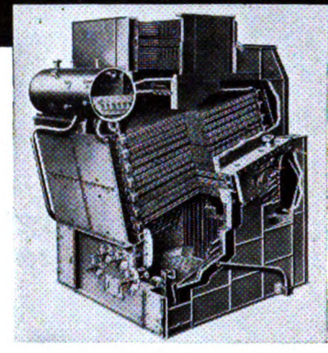
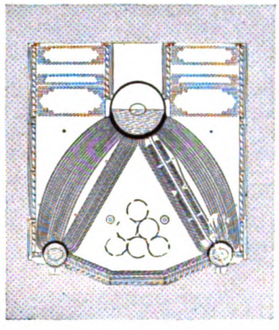
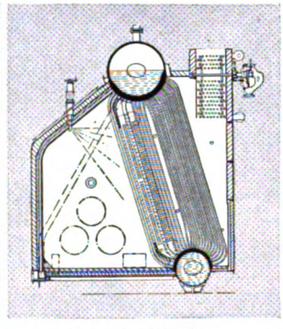


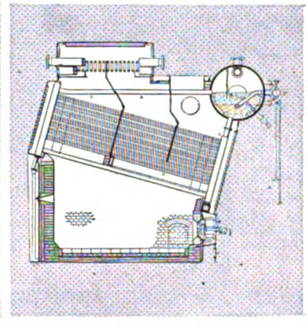
Single-Pass, Header-Type Boiler



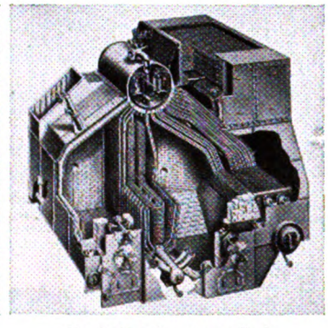
Three-Drum Boiler



Two-Drum Boiler

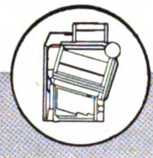


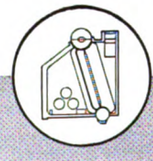
Three-Pass, Sectional-Header Boiler



Single-Uptake, Controlled-Superheat Boiler

AA-210





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*Reg. U. S. Pat. Off.

Be sure and check the features of this new dual-purpose FATHOMETER . . . see for yourself how this outstanding new FATHOMETER gives you the advantage of both recording and indicating in *one unit*.

Remember, too, FATHOMETER service is available in twenty major American ports. Here you'll find factory-trained experts ready to handle all installation and servicing of Submarine Signal Co. gear. There are no long delays waiting for a factory man to come out from the home office . . . no tying up of valuable gear.

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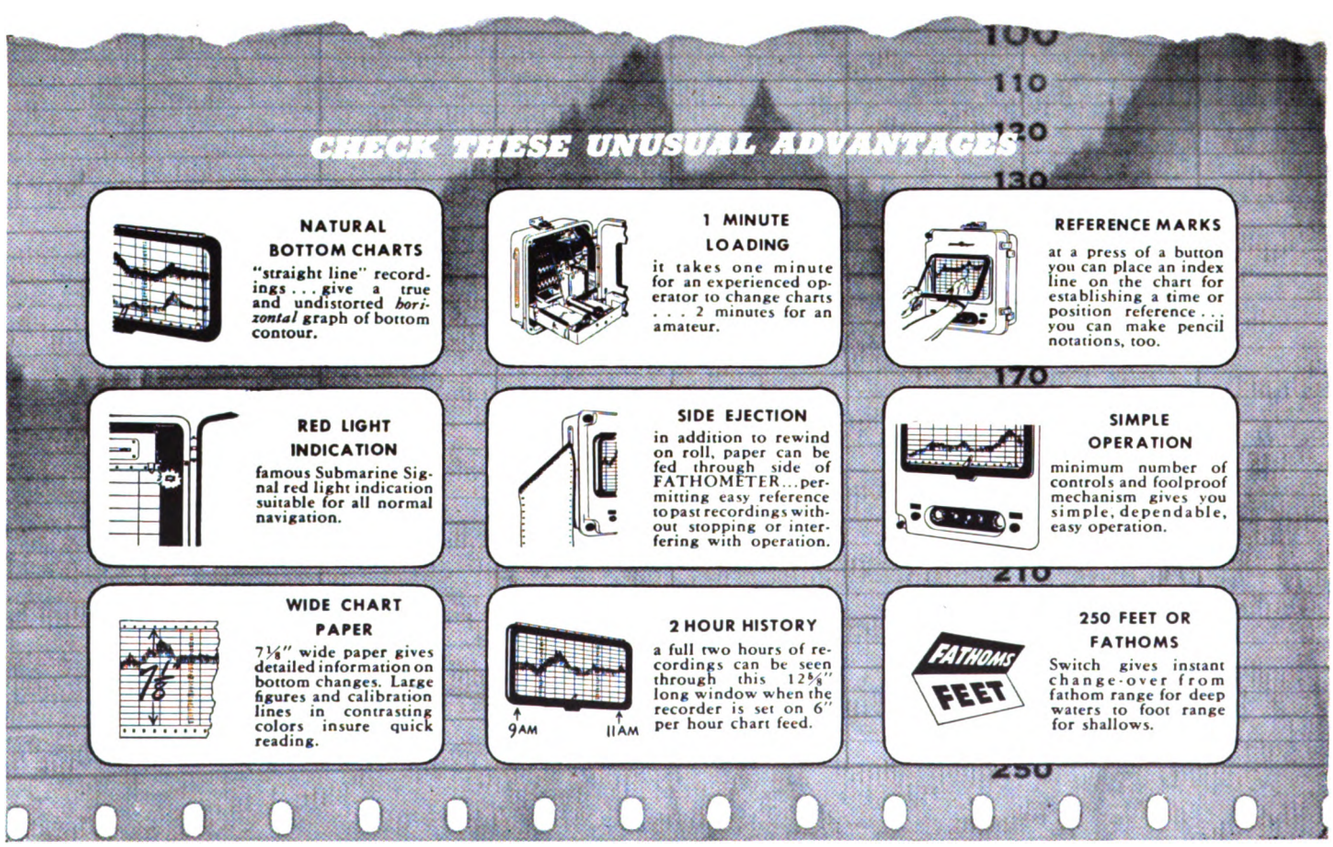

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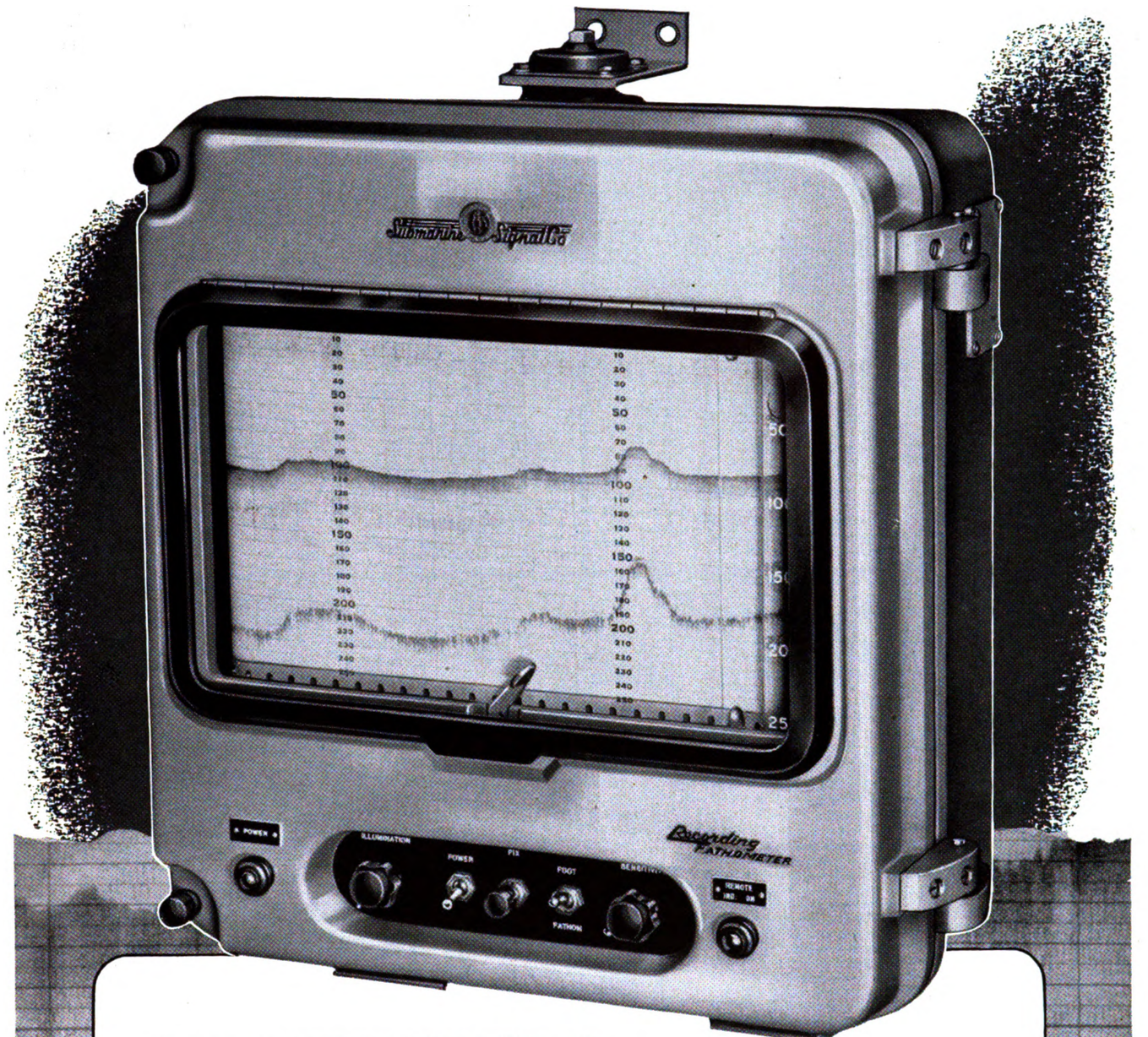

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Direct boiler room indicator of combustion conditions.

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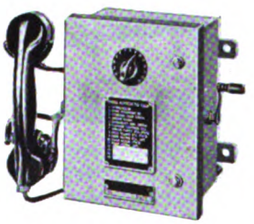
Distributors for Bendix Marine Supersonic Depth Recorder.



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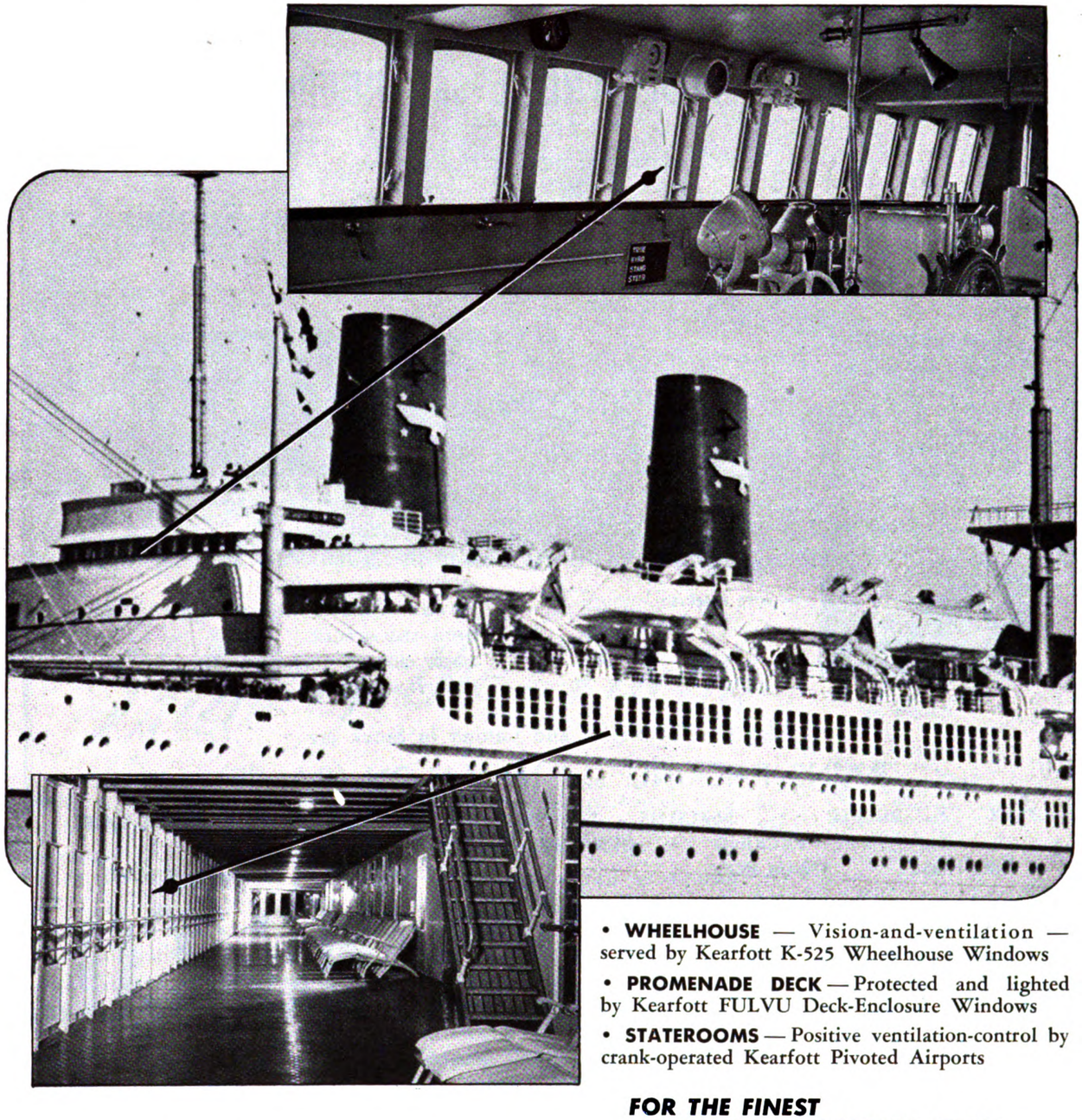
...*The Finest* IN VISION AND VENTILATION



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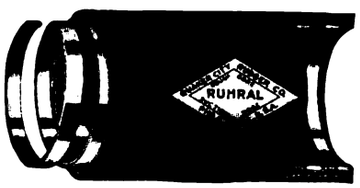

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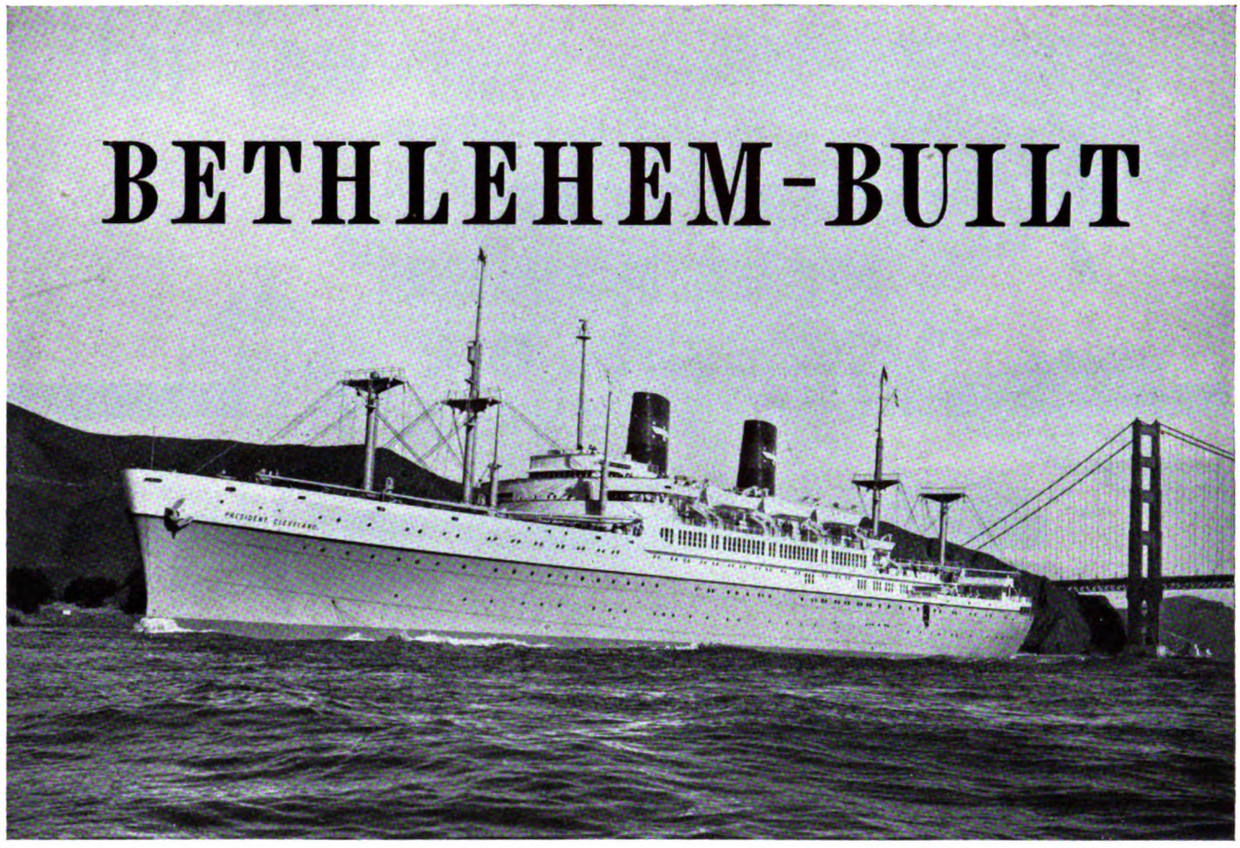

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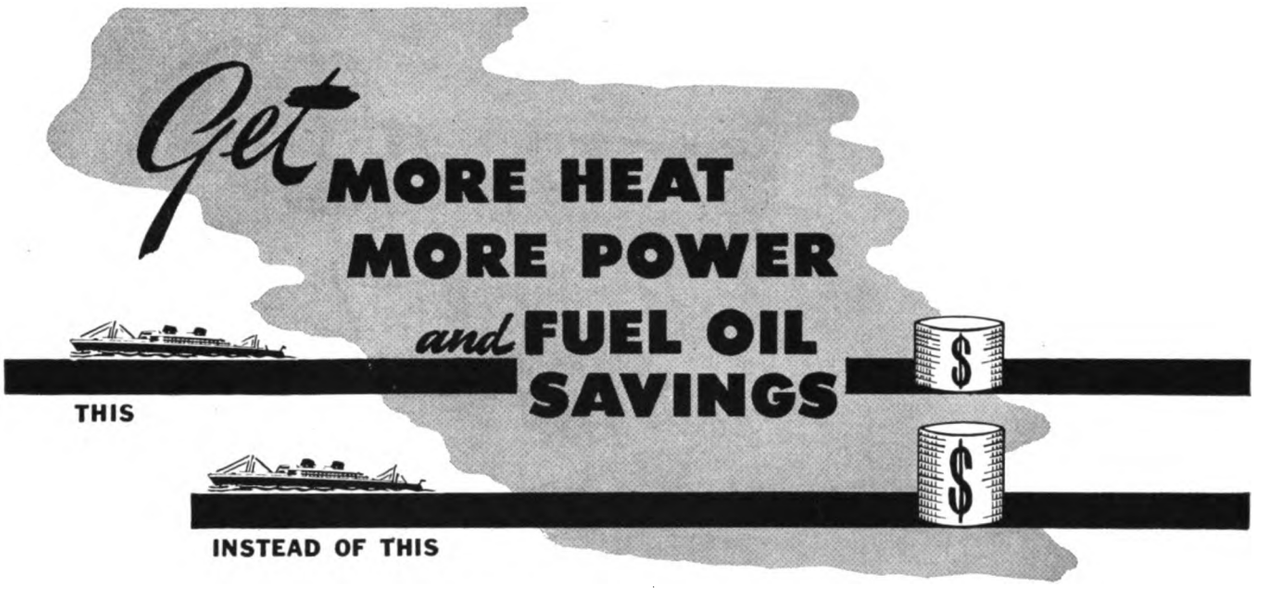

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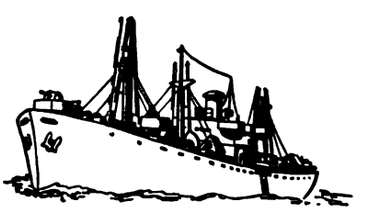

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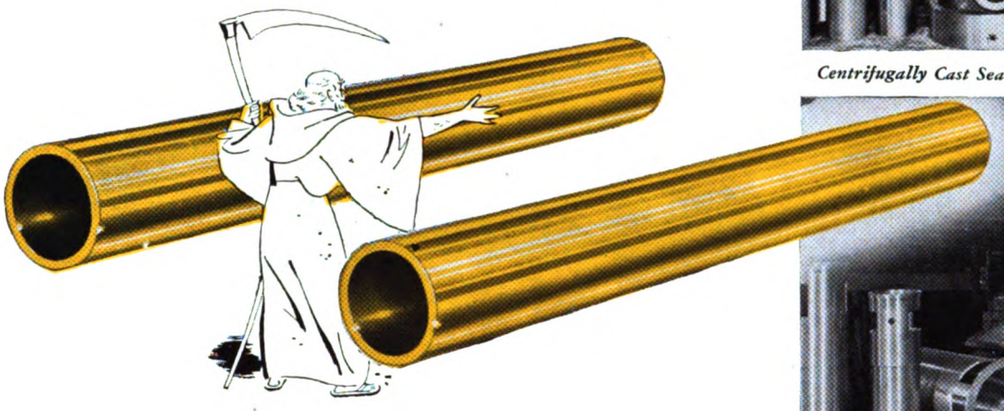

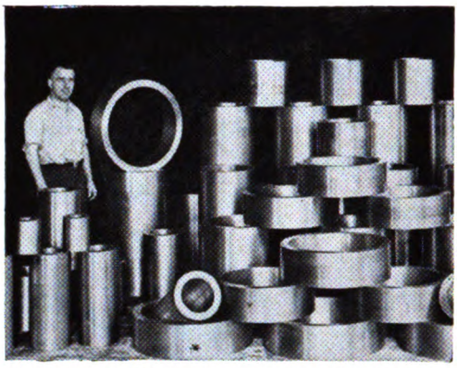

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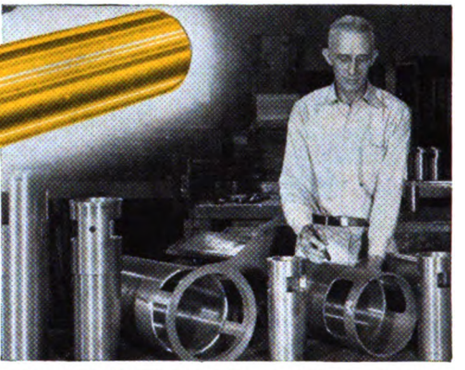

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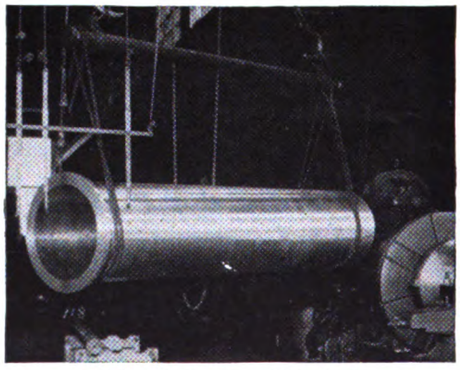

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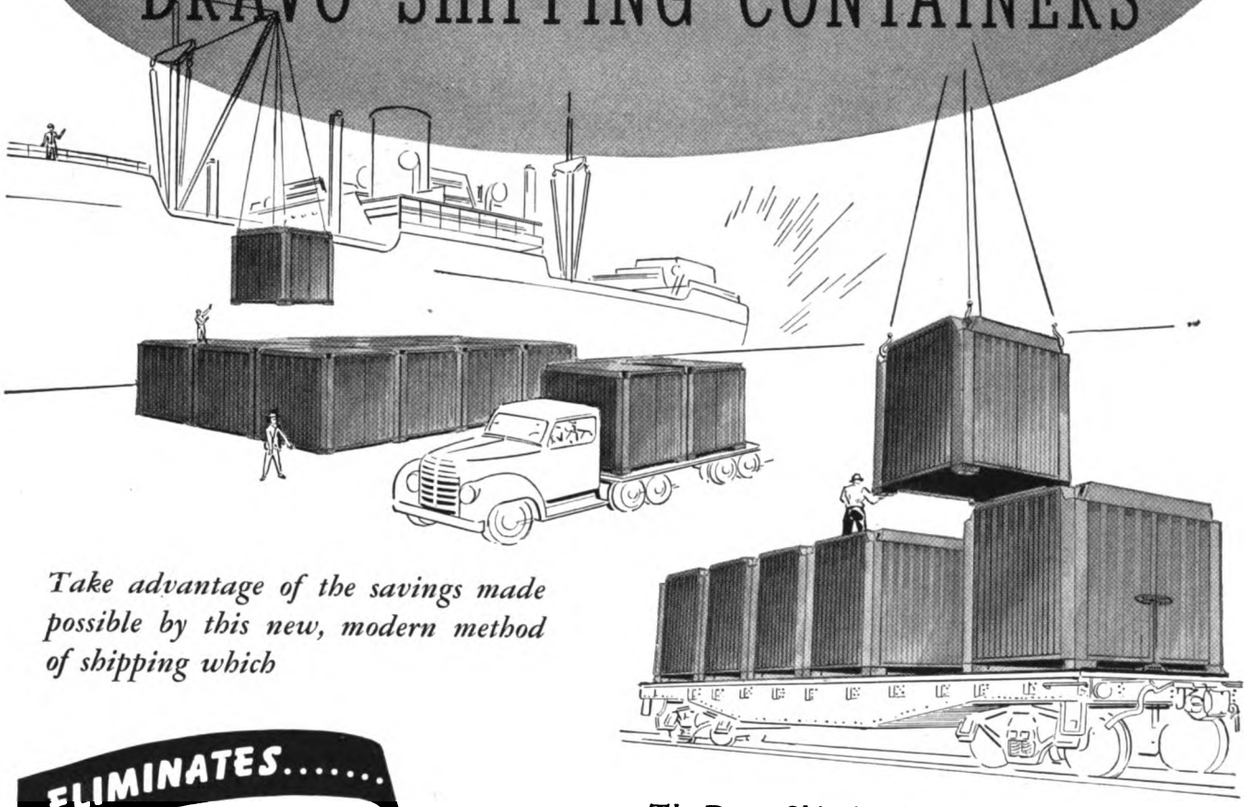

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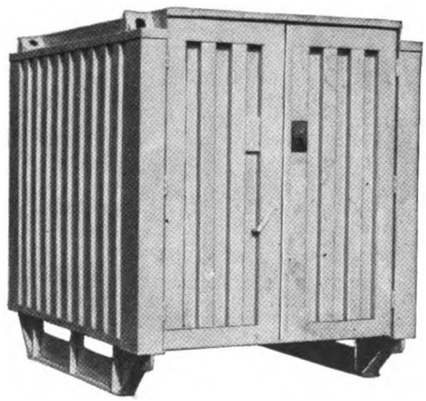

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The LOG's Every Day Reference Data

Statistics about the American Merchant Marine and related Trade

WORLD MERCHANT FLEET

Page

Merchant Fleets of the World as of June 30, 1947 154

Merchant Fleets of the World as of June 30, 1947—

Number, Gross & Dwt. Tonnage of Seagoing Steam and Motor Merchant Vessels of 1,000 Gross Tons and Over 156

Merchant Tanker Fleets of the World—Prewar and Postwar 158

World Tank Ship Fleets as of October 1, 1947—

Actual Changes in Number, Gross and Dwt. Tonnage from March 1, 1947 and September 1, 1939 160

Changes in T2-SE-A1 Equivalents from March 1, 1947 and Sept. 1, 1939 160

Actual Number, Gross and Dwt. Tonnage and T2-SE-A1 Equivalent Tonnage 162

U. S. Postwar Merchant Fleet—General Quality of Oceangoing Vessels 154

General Quality of Vessels Estimated as Required for Operation 154

Comparison Between World Postwar and Prewar—

Deadweight Tonnage by General Types of Vessels 154

Deadweight Tonnage by Principal National Merchant Fleets 164

Combination Vessel Dwt. Tonnage by Principal National Merchant Fleet 162

Tanker Dwt. Tonnage by Principal National Merchant Fleets 162

Freight Dwt. Tonnage by Principal National Merchant Fleets 164

Age of U. S. Vessels of 500 Gross Tons and Over: By Major Services 158

WORLD SHIPBUILDING

Number and Gross Tonnage of Merchant Vessels of 100 Tons Gross and Upwards Launched in the Various Countries of the World During the Years 1915-1947 166

Steel Steamers and Motorships Under Construction in the World as of Dec. 31, 1947 168

Oil Tankers Under Construction in the World as of Dec. 31, 1947 168

U. S. Flag Merchant Tank Ships as of March 1, 1948 by Design & Ownership 168

MISCELLANEOUS

Commercial Traffic Through the Panama Canal—Summary, Fiscal Years Ended June 30, 1935 to 1946 164

U. S. Oceanborne Foreign Traffic—Amount Carried in Tankers and Percent of U. S. Flag Vessel Participation 164

Summary of Sales of USMC Vessels to Jan. 1, 1948—Not included under the terms of the Merchant Ship Sales Act of 1946, as Amended 164

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ON PAGES 96-A-B-C-D

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Editorial Features

America's Maritime Industries—1948 64-75
Report on U. S. Shipping Operations 68
Report on Pacific Coast Trade and Shipping 71
U. S. Ships Transferred to Foreign Flag Since the War 76
International Comparative Analysis—
Maritime Wages and Working Conditions—Unlicensed Personnel 82-83
U. S. Maritime Labor Agreements 83-87
American-Flag Passenger Fleet 88-92
American Owned Fleets 93-98
Steamship Stack Insignia Chart 96-A-B-C-D
Ship Breaking—Revival of a Billion Dollar Industry 100
Vessels Sold for Scrapping Since the End of the War 104-106
Disposition of the USMC Emergency Tanker Fleet 107
U. S. Share of World's Dry Cargo Liner Trade 111
U. S. and Foreign Lines Operating . . . Trade Routes 112-113
Vessel Employment in U. S. Trade 113
Postwar Improvements Now in Progress by U. S. Ports 115-122
Shell Expansion Charts 126
Capacity Charts 129-153
Every Day Reference Data 154

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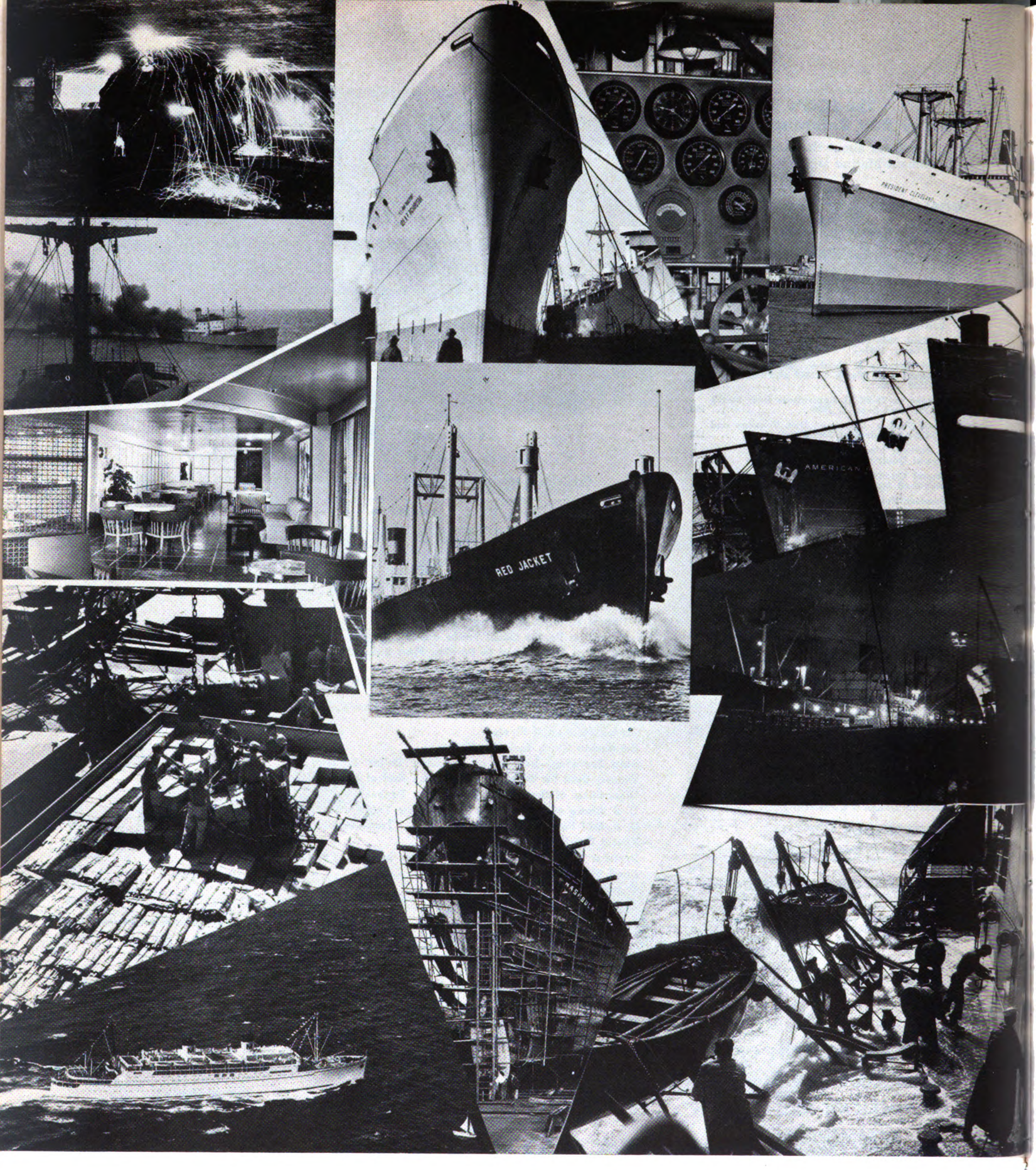

AMERICA'S MARITIME INDUSTRIES . . .

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REPORT ON AMERICA'S MARITIME INDUSTRIES — 1948

Progress through 1947 and the outlook for 1948 from reports prepared by Association of American Shipowners, Pacific American Steamship Association and the Shipbuilders Council of America.

Paced by a cut in bulk cargo shipments, a moderate reduction in 1948 exports in ocean-going vessels is a reasonable expectation. The reduction projected in the attached statement is 5% by value and 12% by weight.

The projected export decline, combined with a steady increase in competing foreign flag tonnage, will mean a substantial reduction in the U. S. dry-cargo merchant marine. Our dry-cargo fleet will probably approximate 13 million deadweight tons by the end of the year as compared with 17.5 million tons at the end of 1947. The drop would be even greater if there were any additional transfers of government ships to foreign registry.

While American coal and grain will remain in heavy demand in the world markets, the high water mark for the coal-grain movement was probably reached in mid-1947. The possible development of a large coal program in the Pacific and Indian Ocean areas could be a partial offset but, even so, coal is likely to be the largest single commodity factor in the decline of our shipping employment.

The dollar stringency has already caused a backward step in our national objective of relatively free multilateral trade. The early 1947 tendency in foreign countries towards more rigid licensing and exchange restrictions on dollar imports was accelerated after the abandonment of sterling convertibility. Here in the U. S. there was a definite tendency for cargo and shipping procurement responsibility to be relinquished by the U. S. government but the outlook for 1948 in these respects is not clear. In 1947 the world's dollar trading deficit was financed primarily by loans and the transfer of dollar assets. The background was therefore relatively favorable for an easing of controls in the U. S. In 1948 the deficit will probably be financed primarily by outright Treasury grants. Under these conditions there may be pressure for more U. S. government participation in the control of export programs.

Since the granting of dollar assistance will not be evenhanded and since our export control machinery will be more selective, the distribution of 1948 exports will differ from the 1947 pattern. The Marshall Plan area should show the best trend. Russia and the satellite countries will be subjected to the tightest squeeze. Latin America will probably show the largest absolute decline in dollar imports. The Far East may show a better record than has frequently been forecast.

Bulk Cargo Movement

In 1947 we exported 18 million tons of grain (including flour expressed in grain equivalents) and 43 million tons of coal in ocean-going ships. The feat of organizing and executing this tremendous movement has never been surpassed in the peacetime history of bulk transportation. More than 50% of our dry cargo tonnage has been employed in the coal-grain program. It is here we must expect the major decline in the demand for shipping services in 1948.

The buying of American coal by Europe is an economic abnormality. While there is no possibility of a return to normalcy in the immediate future, it is apparent that European coal mining has turned the corner. The United Kingdom, the Ruhr and Poland may be able to increase their contribution to their importing neighbors by an aggregate of 30 million tons or more in 1948. Not only can the surplus European areas provide the coal at lower delivered cost but they offer the advantage of softer currencies. The recent reports concerning the probability of 15 million tons of export coal from Britain gave rise to an almost immediate lessening of European interest in American coal.

In any possible recession in demand for American coal, resistance will be encountered at several points. New coal programs in the Pacific and Indian Ocean areas may be of first importance in this resistance. The Japanese coking coal program, which has already begun in a small way will almost certainly be continued this year. Depending on military developments China might even become a small importer of coal, and Pakistan is attempting to sell the State Department on a program. Speculation on possible coal exports to these three areas would have been considered economic lunacy a few years ago and, indeed, no shipping company should gamble on their immediate development. But, in the political chaos that is Asia today, these programs are definitely within the area of ultimate possibility. The Pacific Coast ports of Long Beach, Portland and Seattle would have a prior claim on a major part of these possible programs. If sufficient coal could not be made available to the West Coast ports there might be an overflow to the Gulf ports which are in a good position to handle either Pacific or Atlantic coal shipments.

The decline in grain shipments may be even more sharp than the coal decline. Well worth noting is the fact that the U. S. had ceased to be a net grain exporter before the war. With extraordinary good luck we have had a series of excellent grain harvests throughout the past several emergency years but it is hardly in the cards for such luck to continue indefinitely.

There are more specific reasons for expecting a decline in 1948. In spite of the bad corn crop, our grain exports were maintained at a high level during the last half of calendar 1947, leaving less than half of the crop year quota for the first half of calendar 1948. The crop year grain export target has now been cut to 520,000,000 bushels which indicates that our forward estimates are somewhat high. The pressures to feed the food deficit areas will be so strong, however, that we have set our target somewhat above a realistic level.

Overall Export Outlook

Estimated overall 1948 exports *in ocean-going dry cargo vessels* compare with preliminary 1947 data is shown in Table 1. These exports include reconstruction and relief shipments on Army account to the occupied areas. Such shipments hereinafter carry the Army designation of GARIOA.

It is impossible to allocate vessel tonnage employment precisely against the

Table 1
(In millions of tons & dollars)

	1947 Preliminary Weight	1947 Preliminary Value	1948 Estimated Weight	1948 Estimated Value
Coal	43.0	$ 375.0	38.0	$ 350.0
Grain	13.5	1,150.0	11.0	1,000.0
Flour	4.5	575.0	3.5	500.0
All other	24.0	10,300.0	23.0	9,850.0
	85.0	$12,400.0	75.5	$11,700.0

Table 2
(In millions of deadweight tons)

	1947 Total Tonnage All Flags	1947 U. S. Flag	1948 Total Tonnage All Flags	1948 U. S. Flag
Coal	8.0	4.0	7.2	2.5
Grain	3.0	2.0	2.4	1.4
Flour	1.0	0.7	0.7	0.4
All other	6.0	3.6	5.6	2.9
Export Trade Total	18.0	10.3	15.9	7.2
Domestic Trade		1.8		1.8
Import Extras		2.5		2.5
Repairing		1.5		1.1
Otherwise Idle		1.4		.4
Total Ocean-going Tonnage	17.5		13.0	

Table 3
(In billions of dollars)

	1947	1948	Percent Change
Marshall Plan Area (including Bizonia)	$ 5.3	$ 5.5	+ 3.7
Latin America	3.5	3.0	—14.3
Far East	1.4	1.3	— 7.2
Russia & Satellites	.4	.3	—25.0
All Others	1.8	1.6	—11.1
Total	$12.4	$11.7	— 5.6

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America's Maritime Industries

various U. S. export movements. Table 2 should be accepted only as approximate calculations of the position at the end of 1947 and 1948.

While most of our imports are carried in vessels returning directly from the export services, the imports do make for some employment of extra tonnage which is designated in Table 2 as Import Extras. They force some diversions from foreign ports of discharge to foreign ports of loading and the loading process itself takes time. Our domestic trade item includes vessels trading with non-contiguous territories as well as vessels in the coastwise and intercoastal trades. The "otherwise idle" vessels are almost exclusively government owned. During the latter part of 1947 this category was inflated by a large number of vessels in process of lay up and by the slow return of vessels from the private bareboat charterers.

The amalgamation of all these items indicates the approximate size of our dry cargo fleet by the end of 1948. Such an estimate presupposes, however, that there will be no more transfers of American flag vessels to foreign registry. Any additional transfers would represent a direct and commensurate cut in American flag employment.

Dollar Availability

As in 1947, the key to our 1948 export outlook is the world dollar position. While prospective world dollar sources will be substantially different from 1947, our balance of payments last year is a good guide to the problem of this year. Table I shows that our 1947 exports (including GARIOA) exceeded the value of our imports by $10.0 billion. This huge deficit was financed by heavy dollar capital grants, i.e., the British loan, and by an abnormal liquidation of dollar assets, including the sale of dollars by the Monetary Fund. U. S. monetary gold stocks, for example, increased $2.0 billion during the year and are now practically at the record Pearl Harbor level. Outright hand-outs to foreigners—euphemistically styled "unilateral payments" by the economists—were of relatively small importance in 1947.

The dollar stringency resulting from the wide export-import gap reflected itself early in 1947 in a wave of restrictions on dollar imports. During the course of the year these restrictions became more numerous and, after Britain's futile attempt to maintain sterling convertibility under the terms of the dollar loan agreement, the U. S. export position faced a serious future. Consumer goods—from passenger cars to pots and pans—became the outstanding casualties, with our foreign customers insisting on necessitous and wealth producing imports. The apparent conflict of some of these restrictions with our trade agreements with Sweden, Mexico and the South American countries is still under discussion but it is obvious that we cannot force luxuries upon our customers who do not have the dollars to buy necessities. While not underestimating the long-range importance to the shipping industry of the multilateral trade agreements reached at Geneva and the progress made by our government in promoting the concept of unrestricted trade, the year 1947 must be accepted in more than one sense as a backward step towards controlled trade movements.

Here at home the trend towards free commercial procedures in the export trades may also be arrested. For the coming year at least, the greater part of the Marshall Plan assistance will be in the form of grants rather than loans, if only because of the time factor. Although Congress in the Interim Aid Act and most of the authoritative commentators on the Marshall Plan have given lip service to the principles of private commercial procurement and shipping, there will be strong opposition to the government's withdrawal from these functions in at least certain phases of the Marshall Plan. Fortunately the return of coal procurement to commercial channels has been so successful that, in this one important category at least, there is unlikely to be a reversion to U. S. Government procurement.

Trade restrictions on this side may also be expanded through export controls. Headed towards oblivion on February 29, 1948, our export control machinery has now been extended another year. The implications of the extended system, as modified by the Republican Anti-Inflation Act, are not easy to forecast at this juncture. We may be sure, however, that export control will be a center of controversy in the execution of our foreign aid policy.

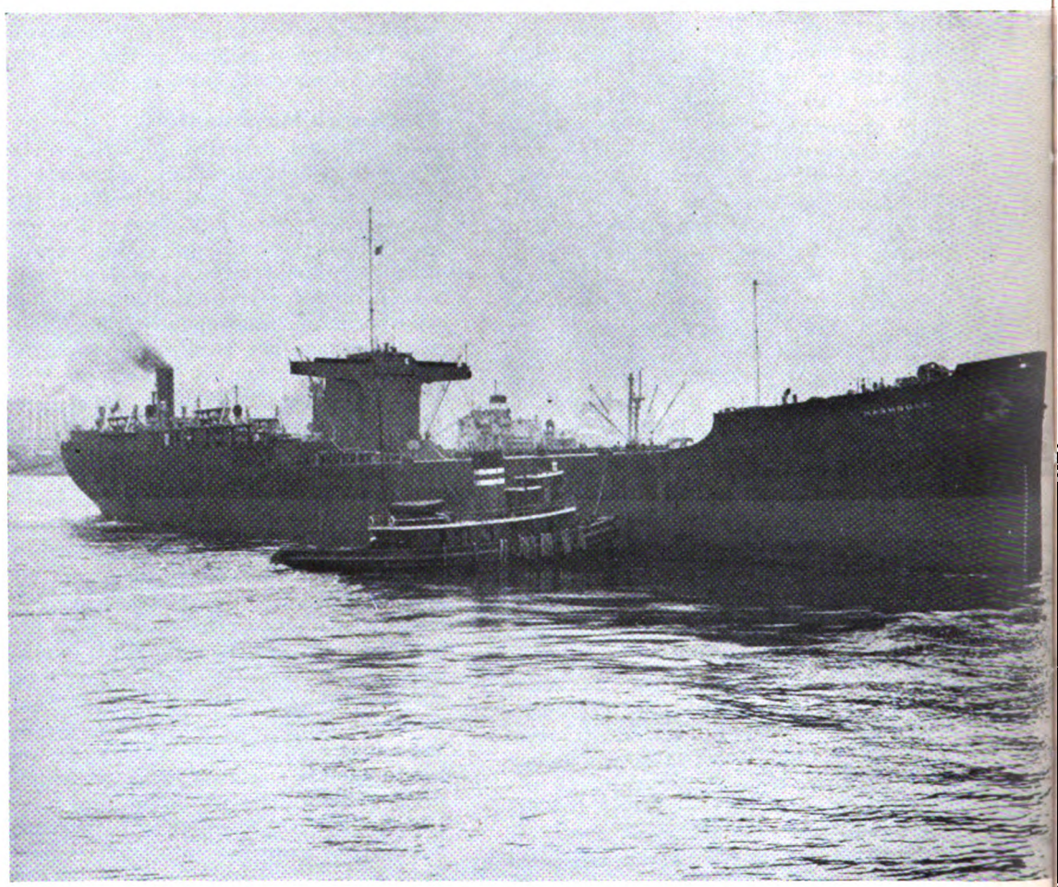
Area Analysis

The trend of total U. S. exports in *dry cargo ocean-going vessels* is estimated by area destinations as shown in Table 3.

Marshall Plan Countries

The fundamental nature of the Marshall Plan has been widely misunderstood. The proposals set down by the Paris Committee are not merely a plan for combatting poverty and starvation in Europe. They are a relatively ambitious reconstruction and capital expansion plan. The shipping industry is familiar with the aggressive merchant vessel construction program already under way in the big European shipbuilding yards. Capital reconstruction and expansion programs for steel, mining, electric power and other basic industries are no less ambitious. Those who look upon our prospective export trade with Europe as largely a coal and grain program do not understand what is being planned in Europe and in official Washington.

To meet the capital expansion needs of Europe we will be confronted with difficult problems of allocations. The Ad-



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ministration has already made it clear that it will adopt a generous attitude towards the participating Marshall Plan nations. Feeling in Congress is divided, but there will inevitably be vigorous opposition to high exports of critical materials and supplies in demand at home. And those interested in trade with other areas are beginning to realize the full trade implications of our government's preoccupation with Europe. Pending a clearer view of our export control policy and the administrative organization for the Marshall Plan in Washington, we can only assume that the participating nations will be given a high priority as claimants for critical American supplies. Anything less than that would mean a fundamental reversal of national foreign policy.

Taking for granted our willingness to export critical supplies to Europe, there remains the financial question of our willingness to provide dollars to offset Europe's dollar deficit. The 1948 deficit itself has been variously estimated. In a set of estimates based on a range of price and cargo availability assumptions, the Harriman Committee fixed the mean 1948 deficit to be financed by the U. S. Treasury at $5.75 billion. Because of the carry over of previous appropriations such as the Greek-Turkish Aid program, the Harriman Committee estimated the net deficit at $5.0 billion.

Against the net deficit, whatever it may actually be, the President has asked for $6.8 billion for the fifteen months ending June 30, 1949. To this amount must be added certain Army funds for Bizonia which aggregate $800 million and the Interim Aid appropriations of $522 million, indicating a gross asking price of somewhat more than $5.0 billion for calendar 1948. If the requested appropriations should not be voted by Congress, our estimate of 1948 exports to the Marshall Area must be considered optimistic.

Latin America

The Latin American trade outlook is weak where the European outlook is strong. For one thing, it is obvious that the Latin American countries will be given a relatively low priority for export commodities in scarce supply. For another, there are no real prospects for large loans to Latin America to say nothing of outright grants comparable to the proposed Marshall Plan. Subjected to close scrutiny from the Export-Import Bank and the International Bank, the Latin American republics have uncovered few real loan possibilities. Brazil's four year plan of economic improvement may offer some possibilities and it is significant that our government is organizing a Brazilian economic mission to study capital expansion prospects. But the recommendations of this mission—and certainly the possibly resulting loans—are at least six months in the future.

During 1947 Latin American imports from the U.S. exceeded exports to the U.S. by approximately $1.7 billion. This huge trading deficit was financed in large measure through the liquidation of abnormal dollar balances accumulated during the war. Stringency became apparent early in the year and practically all countries were forced to tighten their restrictions on dollar imports, a tendency which is still in evidence.

Latin America, and particularly Argentina, will be indirect beneficiaries of the Marshall Plan. It is for this reason that many observers have assumed a good outlook for Latin America in 1948. The difficulty, however, is that certain Latin American countries must in the normal course of their post-war trade receive a bountiful flow of dollars from Europe to offset their own dollar deficit. A full-blown Marshall Plan will probably mean no more than a correction of the floundering trade position that existed after the failure of sterling convertibility. It is therefore to be assumed that the Latin American countries must bring their 1948 imports from the U. S. more nearly in line with exports to the U. S.

Far East

It has become the habit in Washington to make gloomy forecasts of our Far East trade position. While there is a strong probability that our 1948 trade with the Orient in dollars may be slightly below the 1947 level, there is an equally strong probability that there will be a turn for the better later this year. Furthermore, with the resumption of Philippine sugar exports and the return of the Netherlands Indies rubber estates to active operations, there will be plenty of Far Eastern return cargo south of the 20th parallel. There may also be some new return programs, such as steel scrap, but these programs have not yet developed to a point where they can be included prominently in a realistic forecast.

China is usually cited as the reason for Far East pessimism but China (including Hong Kong) now accounts for less than 30% of the dollar value of our exports to the Far East and only about 15% of our imports from the Far East. Our booming trade with the Philippines, for example, is currently more important in each direction. In any case, our exports to China have recently fallen to such a low annual rate that any change must be for the better.

On November 11, 1947, Secretary Marshall proposed a Chinese Aid program of $20 million per month for the fifteen months ending June 30, 1949. If this sum can be related to anything, it is substantially the measure of China's monthly trading deficit with the United States. Although the suggestion was apparently made to satisfy the Congress that China was not being forgotten, the Congress, on its own initiative, proceeded to appropriate $18 million for China in the interim aid act. In the meantime the Administration has prepared its complete aid plan which is reported to be ready for near-term release. While this program may do no more than permit China to limp along until basic policy decisions have been made, it may be the beginning of the probably slow Chinese trade revival.

The Japanese turn may also be close at hand. The inauguration of coking coal imports from Canada may well be the forerunner of a real attempt to revive Japanese industry, a plan which would be assisted by successful private financial arrangements now under discussion. While the road back for Japan will be a long and tortuous one, any industrial revival at all will mean an important expansion of our Far East trade.

Russia and Satellites

Including the final UNRRA and lend-lease pipeline shipments, our 1947 exports to Russia and the satellite countries reached the modest total of $400 million. There will obviously be no appreciable assistance in 1948 and, through tighter export controls, there will be practically no shipments of scarce materials.

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Many people do not realize that trade with Russia is still on the basis of a commercial agreement which embraces most-favored-nation treatment. Furthermore, we should recognize that Russia has been supplying us with certain critical materials. In 1947, for example, Russia accounted for one-third of our manganese imports, half of our chrome ore imports and half of our platinum imports. While economic sanctions may ultimately be adopted, there is no justification at this juncture for writing off our Russian trade completely.

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REPORT ON U. S. SHIPPING OPERATIONS

The major shipping disappointment of the past year was the failure of the domestic industry to show signs of vigorous revival. In the Atlantic-Gulf coastwise trade three general cargo carriers were forced to withdraw, leaving only three others in service as compared with a total of fifteen before the war. In the intercoastal trade only twelve privately owned vessels are in regular round-voyage operation and these twelve are owned by industrial enterprises. To appreciate the full extent of the disappointment we may note that the Maritime Commission has estimated the normal post-war intercoastal fleet at 101 vessels of 1,170,000 deadweight tons.

The trend of our domestic dry cargo fleet of all types, *including government as well as privately owned vessels,* has been as shown in Table 4.

The mid-1947 withdrawal of the Maritime Commission from direct participation in the intercoastal trade represented the end of a futile nineteen months experiment at reestablishing this once important division of the industry. The original purpose of the Maritime Commission entry immediately after the war was to prepare the way for private operations after a more equitable rail rate structure had been established. To effect this end, the Commission appealed to the I.C.C. for an over-all survey of rail rates in so far as they were competitive with water rates, but there has been only negligible corrective action over the two-year period. On February 16, 1948, the rails petitioned for a dismissal of Docket 29663 which is the part of Ex Parte 164 containing the original appeal of the Maritime Commission dealing with the intercoastal trade.

During 1947 the rails were allowed important rate increases. At the beginning of the year a general and permanent increase averaging 17.5 per cent became effective. Then in the mid-year they filed a petition for another general increase of more than 35 per cent, a petition that has already resulted in two interim increases aggregating 20 per cent. But some of these increases have merely aggravated an already discriminatory rate structure since the long-haul increases have been limited by arbitrary "hold-downs" at the request of the rails.

It is becoming persuasively probable that an adequate solution may not come through administrative action. The only answer may be speedy relief from Congress and, fortunately, the course is clear. The Fourth Section of the Interstate Commerce Act forbids a railroad to charge less for a longer than a shorter haul over the same route and in the same direction unless permission is granted by the I.C.C. The intent behind the original authority to make exceptions may have been sound but it has been so flagrantly abused by the railroads that the water carriers are not confident that a proper solution will be found in the administration of the clause. It may therefore be necessary for Congress to define our policy so that the Fourth Section will not be used in the future to strangle water competition.

The deterioration of the privately owned intercoastal fleet has proceeded to such a critical point that some shipping men feel that, even with a more equitable rate structure, direct government assistance may be necessary to promote a healthy revival. Time will tell whether this theory is correct but, meanwhile, our government should refrain from any action that would tend to increase the operating costs of the intercoastal lines. The proposed increase in Panama Canal tolls is difficult to understand in light of the unprofitable operating position of the intercoastal industry today.

Return of Private Control

The 1947 change in the U.S. privately owned and government (active) dry-cargo fleets has been as shown in Table 5.

While U.S. flag participation in our foreign trade showed a persistently declining trend throughout 1947, the record breaking level of bulk cargo exports prevented a substantial decline in the employment of U.S. flag tonnage from the beginning to the end of the year. By the middle of the year the number of Maritime Commission vessels out on bareboat charter reached the record peak of 1,500 in service or allocated. Precisely at that time, because of a combination of rapidly expanding foreign flag fleets and the reversal of our strong export trend, voyage charter quotations in our bulk export trades dropped 30% to 50% in a matter of a few weeks. While a part of this loss was subsequently recovered, the number of vessels out on bareboat charter has continued to drop at an average monthly rate of 75 to the current level of approximately 850.

The modest increase in the privately owned dry cargo fleet reflects the American shipowner's conservative appraisal of the industry's future. The dry cargo U.S. flag industry has now invested in a privately owned fleet of 6.0 million deadweight tons and, barring the possibility of a radical change in the outlook, it is doubtful that this tonnage commitment will be increased substantially in the immediate future. As opposed to this conservative figure, the Maritime Commission has estimated a postwar normal dry cargo fleet of 7.4 million deadweight tons.

From the effective date of the Ship Sales Act of 1946 to the end of 1947, the

Table 4
(In thousands of deadweight tons)

	June 30 1939		December 31 1946 (Approx)		December 31 1947 (Approx)	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
Coastwise*	266	1,336.6	72	720.0	70	700.0
Intercoastal	143	1,377.5	55	600.0	55	600.0
Total	409	2,714.1	127	1,320.0	125	1,300.0

*Composed mostly of bulk carriers in the post-war period.

Table 5

	January 1, 1947		January 1, 1948	
	No.	D.W.T. in Thousands	No.	D.W.T. in Thousands
Privately-Owned	441	3,808.0	642	5,837.5
Active Government Bareboats	982	9,889.0	1,132	11,407.7
Active Government Agencies	508	4,550.0	8	60.2
Total	1,931	18,247.0	1,782	17,305.4

Table 6
Dry Cargo Fleets of the World
(In millions of deadweight tons)

	Sept. 1, 1939	Dec. 31, 1946	Prelim. Dec. 31, 1947	Projected 1951
ERP Nations	36.7	25.7	31.0	39.0
Germany—Japan	11.3	1.9	2.2	2.2
Panama—Honduras	.5	1.2	2.2	2.6
Other Latin America	.9	1.3	2.0	2.3
All Other Foreign	6.9	6.6	7.2	7.5
Total Foreign	56.3	36.7	44.6	53.6
U. S. Active	5.4	18.2	17.3	7.4
U. S. Lend Lease	—	4.1	1.2	—
	61.7	59.0	63.1	61.0

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Maritime Commission approved purchase applications for 400 dry cargo vessels for U.S. registry and 877 dry cargo vessels for foreign registry. Although the general policy of the Maritime Commission throughout 1947 was to oppose foreign sales in the absence of special justifications, a last minute drive resulted in 70 additional foreign sales approvals, most of which barely made the deadline of March 1, 1948, plus another block of 15 Liberty type vessels subsequently given to Italy to replace war losses. In order to block further foreign sales the Congress in Senate Joint Resolution 173 prohibited the Maritime Commission from selling or chartering vessels to foreigners after March 1, 1948.

The conservative vessel purchase programs of American operators may be explained by two major factors. One is the plight of the domestic operators as already noted. The other is the unwillingness of the foreign trade operators to make extensive long-term commitments in the face of all the uncertain prospects of our foreign trade fleet. Depreciation procedures as imposed by the Bureau of Internal Revenue are a major factor in this long-term uncertainty. The average life span of an unsubsidized vessel is set by the Bureau at 28 years, a projection which reduces the possibility of investment recovery in unsubsidized shipping close to the vanishing point. The necessary sweeping reforms in depreciation practices would go far in stimulating a return of shipping to private hands.

The substantial number of government vessels still out on bareboat charter has meant that the U.S. government has remained very much in American shipping. Substantial numbers of the vessels are chartered by operators who never were or are not now important owners of U.S. flag tonnage. Out on fifteen days cancellation clauses, these vessels are too often operated without longer-term economic objectives in mind and their presence has tended to depress the private industry. If chartering preference were given to established private owners, many of the existing abuses would probably be corrected.

Competitive Position of U. S. Shipping

The trend in the relative standing of U.S. dry cargo shipping in relation to competing foreign flag shipping is shown in table 6. The tonnage projections for foreign nations is based on material submitted by the Committee on European Economic Cooperation and on other estimates of forward construction programs. The U.S. flag projection is consistent with the estimate of the U.S. Maritime Commission.

Table 6 underscores the curious stability of total active tonnage over the peacetime years indicated and the wide fluctuations in the flag distribution of the active tonnage. It will be noted that the ERP nations suffered a wartime tonnage loss second only to the losses of the Axis powers. If tankers were included, the ERP nations would already be back close to the pre-war level, and, in view of the recent rapid expansion in the dry cargo fleets, even this category will soon be restored to its old position.

One of the most striking foreign flag developments of the past year was the sensational expansion of the Panamanian dry cargo fleet. Popularly represented as a flight from the American flag, it was in reality nothing of the sort. Relatively few vessels were transferred by American operators to their own foreign flag operations and much of the American money invested in Panamanian vessels did not originate in our shipping industry. Of at least equal importance to American money was the heavy investment of Greek capital. More than a coincidence is the fact that all the Greek-owned Panamanian vessels of today plus the Greek flag fleet are approximately equal to the pre-war Greek flag fleet.

Also significant has been the rapid expansion of the South American fleets. Argentina, for example, had practically no dry cargo merchant marine before the war. Through the acquisition of enemy tonnage and the combined program of foreign construction and U.S. vessel purchases of more than fifty vessels, Argentina will soon have a modern fleet of almost 1,000,000 deadweight tons in operation under government and private control. Similarly, the state fleet of Brazil, which was one of the most antiquated before the war, has been modernized through the construction of twenty of the best post-war cargo liner types in U.S. and Canadian shipyards.

The avowed merchant marine expansion policies of certain South American governments has fostered the rapid growth of the fleets. Not only do the national fleets have first claim on the government and quasi-government cargoes but, through discriminatory practices over a wide range of taxes and fees, U.S. flag tonnage has no real opportunity to take certain cargo items even in the commercially-procured categories. The recent Argentine statement of policy with respect to monopolization of import as well as export cargoes whenever possible points up the seriousness of the outlook. We can only hope that some satisfactory compromise may be worked out at the Bogota Conference.

The rapid recovery of all foreign flag tonnage has reflected itself in the steady decline in the participation of American-flag tonnage in our own export-import trades shown in table 7.

Table 7

% of Foreign Dry Cargo Trade by Weight Carried in U. S. Flag Ships—Canada Excluded

	U. S. Exports	U. S. Imports
1946	70.9%	65.4%
1947:		
1st quarter	59.1	63.1
2nd quarter	57.5	62.9
3rd quarter	56.4	65.3
4th quarter Est.	54.0	64.0

How far this decline will go has been a central topic in the preparatory discussions of the Marshall Plan. The Paris Committee of the participating nations made a frank estimate that American flag vessels would be completely out of the ERP bulk dry cargo trades by the end of 1950. As far as the liner trades are concerned, the Committee assumed that American flag vessels would continue to carry 50% of the available traffic. Since the 1951 tramp traffic to Europe is likely to be about one-third of the total traffic by weight, the Paris Committee Report amounts to a forecast that American flag vessels will then be carrying about one-third of the total cargoes between this country and Europe.

The necessity of financing a major part of our exports through outright grants and loans under the European Recovery Program has brought into prominence Public Resolution 17 as approved by the Congress on March 26, 1934. This resolution, in brief, stated that it was the feeling of the Congress that all cargoes financed by U.S. Government agencies should be carried in U.S. vessels. The application of the Resolution to American trade has never been clearly established. The Attorney General, for example, has held that the Resolution is not mandatory but that it should be followed as a rule of guidance by loan-

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making agencies. While the principles of the Resolution were not incorporated in the British loan, the Export-Import Bank has followed the practice of incorporating its essential provisions in its loan agreements. In a world where trade is dominated by foreign government controls, Public Resolution 17 has been a valuable defensive weapon for the U.S. Merchant Marine.

The U. S. Maritime Commission

The Maritime Commission has long been under attack in Congress. For one thing, the Commission has an unusual combination of administrative and quasi-judicial functions. For another, the problems of wartime operation and the conversion from war to peace were such that no administrative group could have performed the job without criticism. The ship sales program alone, involving almost $2.0 billion of U.S. and foreign purchases, would have been a big project for any administrative group.

Criticism of the Commission during 1947 was most vehement when the members appeared before the House Merchant Marine and Fisheries Committee and the Appropriations Committee. Members of the Congress sharply criticized the Commission for operating inefficiently and for the poor marshalling of facts for the committees.

Unfortunately the shipping industry has had to suffer as a result of these conflicts. The withdrawal of the revolving funds from the Commission's control and their transfer to the general funds of the Treasury has made it more difficult for the government to meet its obligations to the shipowners. Such action taken in order to place the Commission on an annual appropriation basis, is not likely to make for efficient handling of merchant marine problems under the emergency conditions of today. Furthermore, the slashing of funds has seriously handicapped the Commission in exercising a number of its statutory functions.

Two major proposals were made during 1947 for a reorganization of the Maritime Commission. In its report of November 1, 1947, the President's Advisory Committee on the merchant marine recommended that the executive and operating functions of the Commission should be transferred to an Administrator reporting to the Secretary of Commerce. Only the quasi-legislative and quasi-judicial functions would remain with the five Commissioners as set up by the Merchant Marine Act of 1936. The other major proposal was embodied in Senate Bill 1812 to create a separate Department of Transportation of cabinet rank in which the Maritime Commission, as well as several other transportation agencies, would be absorbed.

In the meantime, the Commission on Organization of the Executive Branch, as set up through Public Law 162 of the 80th Congress, has been actively investigating the whole administrative setup of our government. The transportation investigation has been delegated to the Brookings Institution and the final recommendations may well figure prominently in the ultimate settlement of our maritime administration.

It seems obvious that some changes in the organization of the Commission would be helpful. The Hale Bill, for example, which would remove present restrictions against the appointment to the Maritime Commission of persons who had been employed in the shipping industry within the prior three years, is a case in point. Nevertheless, it seems equally true that the mere establishment of a new administrative agency would not be sufficient to solve the problems of either the industry or the government.

Operating Differential Subsidies

The operating differential subsidy position in particular has been complicated by differences of opinion between the Commission and the Congress. At present cost relationships, the annual appropriation necessary to bring the subsidizable items into parity with competing foreign costs may approximate $50.0 million. The actual appropriation was only $15.0 million for fiscal 1947, $10.0 million for fiscal 1948, and may be comparably small for fiscal 1949.

So far the appropriation deficiencies have not made any real differences since, although technically the subsidy payments have been accruing since January 1, 1947, no actual payments have been made. The procedure for prorating the available subsidy appropriation over the substantial operating differential claims remains to be worked out.

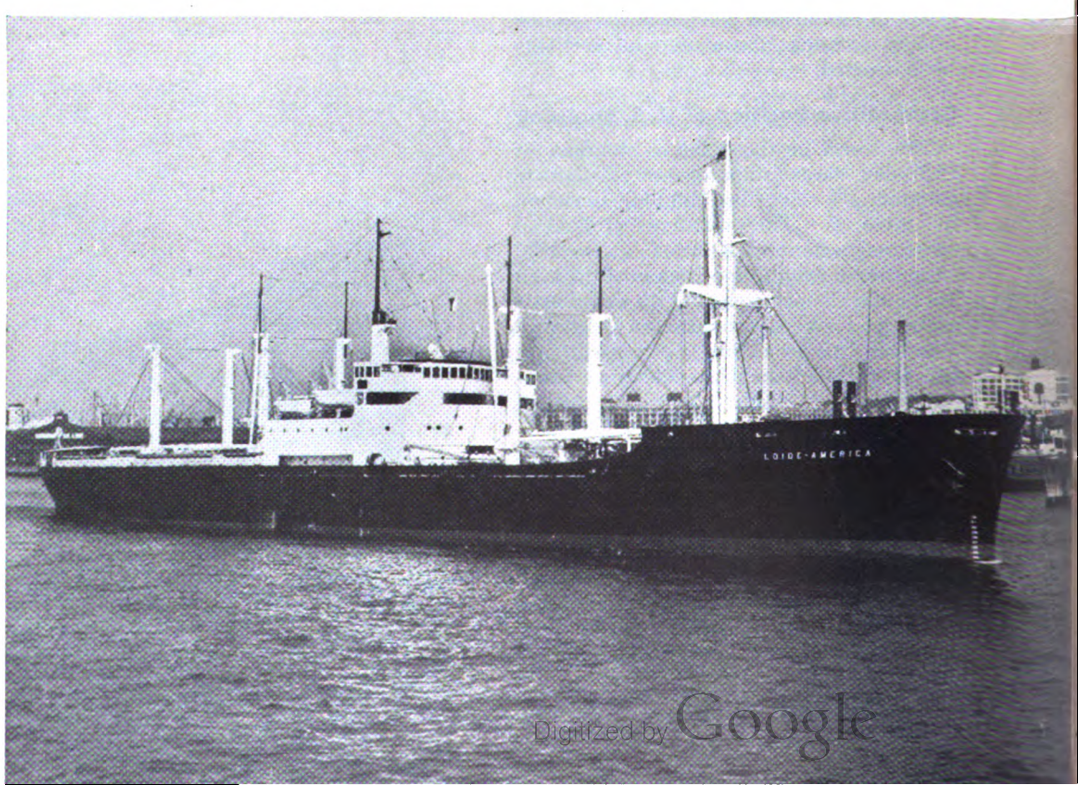
Subsequent to the end of the war, there have been few changes in operating differential subsidy alignments. One company has been added to the subsidized group as it existed at the outbreak of war. There have been a few extensions of existing routes, a few increases in the number of contractual sailings and a few new allocations of routes to companies already subsidized. There have also been rejections of trade route applications. All in all the Maritime Commission's policy with respect to subsidy awards has tended to follow the pre-war pattern.

In light of the growing spread between American and foreign flag costs, it is apparent that a large American-flag merchant fleet cannot be maintained in foreign trade on the basis of the existing subsidy arrangements. This point takes on even more significance in view of the position of the domestic fleet. The problem is one of the most critical to be faced by the industry.

Report of the President's Advisory Committee on the Merchant Marine

The President's Advisory Committee was concerned with something more than participation in a program of reorganizing the Maritime Commission. Its most concrete and far reaching recommendation was a construction program of 46 passenger ships to cost approximately $150,000,000 per annum over a four-year period. A major recommendation on this subject was heavily underscored in the President's original letters of appointment to the Committee and, indeed, the Maritime Commission had already prepared a program of approximately that magnitude.

Since the Administration has made virtually no comment on the Report subsequent to its transmittal on November 1, 1947, it has become a habit to refer to its "pigeon holing". But the real explanation probably runs considerably deeper. While many of the basic recommendations remain sound in principle, the rush of world events has brought new elements into the problem. A major weakness in our preparedness chain is the shortage of vessels readily convertible to specialized military use. It is to be assumed that the Administration is



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preparing a program of new transport and fast tanker types. How the new construction will be financed and on whose account the construction will be undertaken do not have quite the same meaning as in the hearings before the President's Advisory Committee.

While the recommendation with respect to passenger ships was obviously the most critical from a national defense standpoint, it is regrettable that some of the other recommendations were given little stress and little subsequent publicity. Worthy of particular note is the fact that the Report contains a lucid account of the destruction of the domestic trades by the war and refers to the historical discriminatory rate structure. In discussing the adjudication of the discriminatory rail rates by the Interstate Commerce Commission, however, the Committee considered it "improper" to do anything more than urge rapid resolution of the problem.

Other practical recommendations of the Committee would be more effective if exposed to the scrutiny of public opinion. Tax reform for the unsubsidized operators, the restoration of a revolving fund "in limited amount"—these and other proposals, if expeditiously acted upon, would materially assist the private operators in establishing a strong industry as a national asset in peace and emergencies.

World Shipping Organizations

During the recent war and the first six months of the post-war period, the shipping resources of the United Nations

(Continued on Page 80)

REPORT ON PACIFIC COAST TRADE AND SHIPPING

Total dry cargo waterborne trade on the Pacific Coast, although showing a substantial increase in 1947 over 1946, is still 25 percent below the prewar volume, due primarily to the unreconstructed nature of the domestic trades.

Table 8 shows that intercoastal tonnage in 1947 was still only half of what it was in 1939 and coastwise tonnage is only 9 percent of its prewar volume, although both these trades have registered decided increases in tonnage in 1947 over 1946.

The foreign trades have fared decidedly better, with a 50 percent increase in 1947 over 1946 and an 18 percent increase in 1947 over the last prewar year. This is despite the fact that Pacific Coast shipping has not participated significantly in the tremendous relief shipments of coal, wheat and machinery that has characterized the large increase in foreign trade on the Atlantic Coast over prewar.

Pacific Coast trade with the non-contiguous territories—namely, Hawaii and Alaska—quickly resumed its prewar level in 1946, and in 1947 showed better than 10 percent increases over both 1946 and 1939.

Share of Each Trade in Total Coast Tonnage

At the outbreak of World War II, foreign trade was responsible for only 37 percent of total Pacific Coast cargoes.

The postwar years, however, present a marked shift in trade emphasis, with foreign trade cargoes being 57 percent of the total in 1946 and nearly 60 percent in 1947.

The domestic trades (coastwise, intercoastal and non-contiguous) while comprising 63 percent of total trade in 1939, were able to command only between 40 and 43 percent in the first two postwar years. Prewar the Pacific Coastwise fleet had 30 ships and the intercoastal fleet, 150. At present, these two trades have 7 and 55 to 60, respectively.

The figures for coastwise trade include only outbound loadings. If both loadings and unloadings of coastwise cargoes were to be included, the domestic *port* traffic would comprise 70 percent of total Pacific Coast *port* traffic. This is the figure most commonly used in discussing this phase of prewar Pacific Coast shipping.

Total Pacific Coast Foreign Trade by Ports

Total foreign trade tonnage gain for the coast was 50 percent in 1947 over 1946 and 18 percent for 1947 over 1939, last normal prewar year.

Each of the four major port areas individually registered gains in total foreign trade tonnage in 1947 over 1946, although there is a marked shift in the relative position of the various ports in terms of total foreign trade tonnage handled. While San Francisco ports had the heaviest foreign trade tonnage in 1946, they were third in 1947, with Washington and Oregon in first and second places. Los Angeles dropped from third in 1946 to fourth in 1947.

Oregon ports were first in percentage gain in foreign trade cargoes for 1947 over 1946. Washington ports were second, followed by Los Angeles and San Francisco. Oregon doubled her foreign trade tonnage in 1947 over 1946 while San Francisco's gain was only 10 percent.

The lead of Washington and Oregon ports, both in total tonnage and percentage gain, is due in no small measure to the insatiable overseas demand for lumber, wheat and coal, which moves predominantly from these ports.

In percentage of total U. S. foreign trade cargoes handled, Pacific Coast ports as a whole registered almost no gain in 1947 over 1946.

Dollar Value of Pacific Coast Foreign Trade, 1946 and 1947

So far, this analysis has been confined to tonnage comparisons. The reason for this is to eliminate the kind of distortion which accrues in comparing the value of goods in a prewar year with the value of goods in the postwar period of inflated money.

However, for the sake of establishing a proper relationship between the ports on the Pacific Coast, and the foreign trade in which they participate, table 9 has been drawn up to show the dollar value of dry cargo foreign trade of the Pacific Coast ports in 1946 and 1947.

When foreign trade is measured by dollar value of imports and exports, San Francisco takes the lead for both postwar years, accounting for about half the value of all coast foreign trade.

While Los Angeles increased only 43 percent tonnage-wise in 1947 over 1946, the dollar value of that port's trade increased 118 percent in 1947 over 1946. Similarly, San Francisco's dollar value increase was 23 percent as against only 10 percent in tons handled.

Conversely, Washington increased tonnage 73 percent, but in dollar value only 42 percent. Oregon ports led in tonnage increase with 101 percent, but were last in dollar value increase with only 18 percent.

This would indicate that bulk, or lesser value, cargoes have increased as a factor in total foreign trade of the Washington and Oregon ports, while manufactured, or greater value cargoes, have increased as a factor in the total share of foreign trade of both California ports.

Dollar Value Compared With Tonnage

Table 10 makes a comparison between the percentage of total U. S. Foreign trade handled by Pacific Coast ports in

Table 8

Dry Cargo Movements in Waterborne Trade of Pacific Coast Ports, by Type of Trade, 1939, 1946, 1947*

(Short tons)

	1939	1946	1947 (est)	% Change '47 over '46	% Change '47 over '39
Foreign	7,702,000(1)	6,068,350(2)	9,089,832(2)	+50%	+18%
Non-contiguous	2,013,685(2)	1,991,736(4)	2,234,000(4)	+12	+11
Intercoastal	6,978,000(1)	2,364,402(5)	3,541,900(3)	+50	—49
Coastwise (loadings only)	3,738,000(1)	184,363(5)	324,678(5)	+75	—91.3
TOTAL TRADE	20,431,685	10,608,851	15,190,410	+43%	—25.6%

* Excludes cargo under control of U. S. armed forces. Includes UNRRA, Lend Lease, cargoes for U. S. Government agencies other than armed forces.

Source: Pacific American Steamship Association

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terms of dollar value and in terms of tonnage.

Too often these two types of comparisons are used interchangeably, with erroneous conclusions. Table 10 shows clearly that there is a substantial difference between the two methods of measuring the foreign trade volume in a particular port.

For example, while Pacific Coast ports handled but 6.1 percent of U. S. imports in 1946, tonnage-wise, the dollar value was 10.4 percent of the U.S. total.

Atlantic Coast and Pacific Coast Foreign Trade Compared

It has been previously mentioned that Pacific Coast ports have not experienced the postwar boom in foreign trade that has been the lot of Atlantic ports.

As long as relief shipments to Europe continue to be shipped predominantly from East Coast ports, as they will under any European Recovery Plan commitments, and as long as political and financial chaos burden a large part of the Oriental trade (upon which the Pacific Coast relied for 60 percent of her foreign trade before the war), this same disproportionate participation between Atlantic and Pacific Coast ports is likely to continue.

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REPORT ON U. S. SHIP CONSTRUCTION AND REPAIR

Ship repair operating conditions during the past fiscal year have been somewhat better than anticipated, primarily because of the continued demand for ship conversion, which is responsible for the greater part of the employment. That part of the industry exclusively devoted to shipbuilding work continued to decline until after the first of the year. Considerable encouragement is offered by contracts recently awarded to four shipyards for the construction of a total of twenty-three large size oil tankers, deliveries of which, however, are spread over the next two years or more.

Total output of commercial vessels, 1,000 gross tons or over, in the industry during the calendar year 1947 was 286,474 gross tons, as compared with 669,454 gross tons in 1946. The latest report of the Liverpool Journal of Commerce shows that shipbuilding in the United States as of January 1948 represents only 5.1 percent of world building in progress. No contracts have been placed since the war for new high-class passenger vessels or for combination passenger and cargo vessels. Only one passenger vessel, the PRESIDENT WILSON, for the Maritime Commission, was under construction in the United States this year and this vessel, a war contract, was recently completed. The Maritime Commission has funds available for the construction of two or more vessels for Mediterranean service and for three or more vessels for Pacific service. Bids have been pending for nearly two years for the construction of the former and bids were recently opened and are now pending for the building of the latter.

Vessels of these types are those that were in urgent demand at the outbreak of World War II. They were insufficient in number at that time and they are wholly inadequate in number at the present time. On Pearl Harbor day, December 7, 1941, the United States passenger-carrying fleet consisted of 113 vessels with a passenger capacity of 38,161.

Today there are only 42 passenger and combination passenger and cargo vessels in the fleet with a passenger carrying capacity of 11,279 persons. Of these vessels 24 are of the prewar vintage and 18 are postwar.

When all of this work now contemplated has been completed there will be a total of only 57 passenger-carrying ships with an aggregate passenger capacity of 17,000. These figures do not include any ship at present temporarily in passenger service under waivers, later to be withdrawn from service. The MATSONIA (formerly the MALOLO) recently withdrawn from service has reduced the total by 1 ship and by 750 passengers. Vessels of the passenger type and of the combination passenger and cargo type are very important in balancing a ship construction program in a shipyard as they afford the best and largest field for the maintenance of the all-important technical staff in the industry, without which technical staff the industry cannot survive. Aside from oil tankers the greater part of the construction of merchant vessels in this country, from year to year, involves the Maritime Commission and Government appropriations.

Naval Vessels

No contracts have been placed since the war for the construction of any Naval vessels in private shipyards, except for one experimental submarine. Since the first of the year, 3 Naval vessels on which work had been suspended have been reinstated for completion. It is understood that the conversion of a number of destroyers and submarines and some other types of craft to special services is in contemplation. Work has already been started on some of these vessels.

It is also understood that conditioned upon the suspension of certain Naval work now under way in the private shipyards that the funds that would have been expended on these vessels will be made available for new designs. This program offered little hope for activity in the Shipbuilding Industry during the fiscal year 1949 as expenditures during that fiscal year would only be equal to those that would have been expended on the contracts that are being held up.

Conversion work, which has played such an important part in employment in the Shipbuilding and Ship Repairing Industry since the war, can be expected to fall off heavily during the next fiscal year.

Merchant Ship Construction in 1947

The following tabulation shows the number and types of seagoing merchant vessels, each of 1,000 gross tons or over,

(Continued on Page 75)

Table 10

Percentage of Total U. S. Dry Cargo Foreign Trade Passing Into and Out of Pacific Coast Ports, in Dollar Value and in Tonnage, 1946-1947

	Exports		Imports	
	$ Value	Tonnage	$ Value	Tonnage
Jan.-Dec., 1946	7.5%	6.3%	10.4%	6.1%
Jan.-Sept., 1947	8.3%	6.24%	9.4%	6.8%

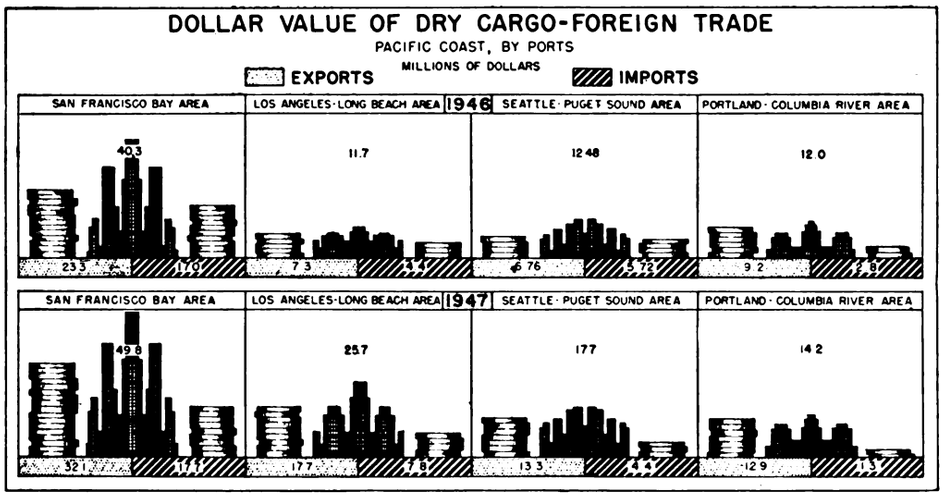

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Table 11

Seagoing Merchant Shipbuilding Contracts on Hand As Of April 1, 1948 Together With Per Cent Representing Unfinished Work

(Vessels 1,000 Gross Tons and Over)

Name of Plant	Name of Vessel	Type of Vessel	Gross Tons	Owner	Per Cent Unfinished Apr. 1 1948	Scheduled Delivery Date
Albina Eng. & Mach.	M. R. Chessman	Pass. Veh. Ferry	1,400(L)	Oreg. St. Highway	0	April
Bethlehem-Alameda	Pres. Wilson	Passenger	15,450(L)	Maritime Commission	3	April
Beth. Sparrow Pt.	Hibueras	Fruit Ship	4,750(L)	United Fruit Co.	3	April
	Ulua	" "	4,750(L)	" " "	8	May
	Morazam	" "	4,750(L)	" " "	13	August
	Cubore	Ore	8,558(L)	Ore S/S Co.	15	June
	Hull No. 4458	"	8,558	" " "	26	July
	Hull No. 4463	Tanker	10,700	Foreign Interests	85	December
	Hull No. 4464	"	10,700	" "	92	Jan. '49
	Hull No. 4465	"	10,700	" "	95	Feb. '49
	Hull No. 4466	"	10,700	" "	98	Mar. '49
	Hull No. 4467	"	17,500	Gulf Interests	100	May '49
	Hull No. 4468	"	17,500	" "	100	June '49
	Hull No. 4469	"	17,500	Foreign Interests	100	Aug. '49
	Hull No. 4470	"	17,500	Gulf Interests	100	Dec. '49
	Hull No. 4471	"	17,500	" "	100	Jan. '50
Eureka Iron Works	T-1	Trawler	1,850	Portuguese Interests	57	September
	T-2	"	1,850	" "	62	October
	T-3	"	1,850	" "	84	Feb. '49
Ingalls S/B Co.	Loide-Ecuador	Cargo	5,409(L)	Lloyd Brasileiro	3	April
	Loide-Peru	"	5,409(L)	(Brazil)	12	April
	M.O.P 941	"	1,175	Ministry of Public Works-Argentina	35	May
	M.O.P. 942	"	1,175	" " " " "	42	May
	M.O.P 943	"	1,175	" " " " "	50	June
	M.O.P. 944	"	1,175	" " " " "	60	June
	Hull No. 526	Tanker	7,800	Texas Company	100	Mar. '49
Newport News S/B	Hull No. 475	"	17,000	Stan.Oil of N. J.	100	Mar. '49
	Hull No. 476	"	17,000	" " " "	100	Apr. '49
	Hull No. 477	"	17,000	" " " "	100	Aug. '49
	Hull No. 478	"	17,000	" " " "	100	Sep. '49
	Hull No. 479	"	17,000	Atl. Maritime Co.	100	Oct. '49
Sun S/B Company	Hull No. 565	Army Dredge	21,572*	Army	73	Mar. '49
	Hull No. 566	Tanker	17,000	Stand. Oil of N. J.	100	December
	Hull No. 568	"	17,000	" " " "	100	Mar. '49
	Hull No. 567	"	17,000	Gulf Oil Co.	100	Feb. '49
	Hull No. 569	"	17,000	" " "	100	May '49
	Hull No. 570	"	17,000	Tanker Navigation Co.	100	June '49
	Hull No. 571	"	17,000	" " "	100	July '49
	Hull No. 572	"	17,000	" " "	100	Sep. '49
	Hull No. 573	"	17,000	" " "	100	Oct. '49
	Hull No. 574	"	17,000	" " "	100	Dec. '49
	Hull No. 575	"	17,000	" " "	100	Jan. '50
	Hull No. 576	"	17,000	" " "	100	Mar. '50
Welding Shipyard	Hull No. 24	Tanker	17,940	Nat'l. Bulk Carriers	80	July
	Hull No. 25	"	17,940	" " "	80	July
		44 Merchant Vessels of	515,264 Gross Tons			
		1 Dredge	of 21,572 Displacement Tons			
		45	536,836			

(L) Launched
(*) Displacement Tons

Total: 8 Vessels Launched.

Percentage of Completion

No. of Vessels	% Unfinished April 1 1948
5	0— 10%
3	11— 20%
1	21— 30%
1	31— 40%
2	41— 50%
2	51— 60%
1	61— 70%
3	71— 80%
2	81— 90%
25	91—100%
45 Vessels	

Scheduled Deliveries

Month	Vessels to be Delivered in: 1948	1949	1950
January		1	2
February		3	
March		5	1
April	5	1	
May	3	2	
June	3	2	
July	3	1	
August	1	2	
September	1	2	
October	1	2	
November		0	
December	2	2	
Total	19	23	3

GRAND TOTAL: for 1948, 1949 and 1950—45 Vessels

Source: Shipbuilders Council of America

Great Britain . . . busy ways.

United States . . . empty ways.

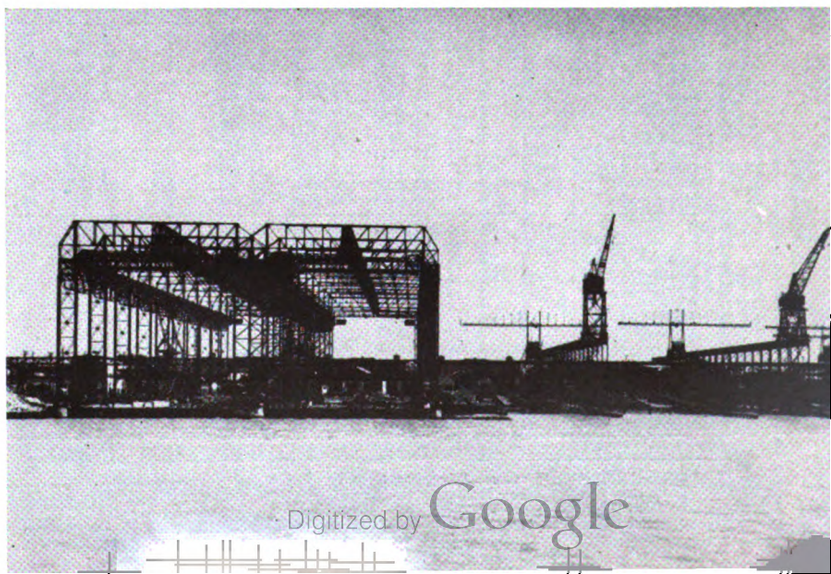

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Table 12
Merchant Vessels Completed by Each Shipyard in 1948 up to April 1st
Self-Propelled, Steel, 2,000 Gross Tons and Over

Shipyard	Total				Passenger and Cargo				Cargo					Tanker				
	No.	Gross tons	Dead-weight tons	Horse-power	No.	Gross tons	Dead-weight tons	H.P. Steam	No.	Gross tons	Dead-weight tons	H.P. Steam	H.P. Diesel	No.	Gross tons	Dead-weight tons	H.P. Steam	H.P. Diesel
Bethlehem-Alameda Shipyard Alameda, Cal.																		
Bethlehem-Sparrows Pt. Shipyard Sparrows Point, Md.	3	21,836	42,293	25,100					2	13,639	29,440	19,050		1	8,197	12,853	6,050	
Federal S. B. & D. D. Co. Kearny, N. J.																		
Ingalls Shipbuilding Corp. Pascagoula, Miss.	4	21,632	31,480	26,400					4	21,632	31,480	26,400						
Newport News S. B. & D. D. Co. Newport News, Va.																		
Southeastern S. B. Corp. and Welding Shipyards	2	7,598	11,806	3,400					2	7,598	11,806		3,400					
St. Johns River S. B. Co and Welding Shipyards																		
Sun Shipbuilding & D. D. Co. Chester, Pa.																		
Tampa Shipbuilding Co. Tampa, Fla.	2	5,210	7,540	13,360					2	5,210	7,540		13,360					
Welding Shipyards Norfolk, Va.																		
TOTALS	11	56,276	93,119	68,260					10	48,079	80,266	45,450	16,760	1	8,197	12,853	6,050	

SOURCE: American Bureau of Shipping.

Table 13
Recapitulation of Shipbuilding Contracts in Existence April 1st, 1948
As to Type and Propelling Power

Type	No.	Gross tons (Est.)	Reciprocating		Turbine		Turbo-Electric		Internal-Comb.		Diesel Electric	
			No.	H.P.	No.	H.P.	No.	H.P.	No.	H.P.	No.	H.P.
Cargo Ship	7	44,117			7	59,000						
Cargo-Refrig.	3	15,225			3	18,150						
Passenger-Cargo	1	15,359					1	20,000				
Tanker	32	501,930	1	2,800	31	404,800						
Coastal and Harbor Tanker												
Coastal Cargo	5	5,615							5	3,600		
Trawler-Steel	9	6,884							9	6,125		
Fireboat	1	95							1	660		
Tug-Steel	7	1,176	2	2,000					3	1,230	2	2,200
Ferry	3	1,860							3	1,820		
Towboat	12	3,984							12	18,950		
Tank Barge	57	36,178										
Hopper Barge	63	34,245										
Derrick and Drill Barge	15	3,410							14	2,380		
Cargo Barge	20	6,801										
Dredge	2	12,580	1	3,260			1	8,000				
Yacht	2	187							2	1,000		
TOTALS	239	689,646	4	8,060	41	481,950	2	28,000	49	35,765	2	2,200

Self-Propelled Vessels — 98 — 611,992 gross tons — 555,975 horsepower.
Non-Propelled Vessels — 141 — 77,654 gross tons.
SOURCE: American Bureau of Shipping.

Table 14
Monthly Record of Merchant Vessels Completed by American Shipyards Arranged According to Coastal Regions in Which Constructed—Self-Propelled, Steel, 2,000 Gross Tons and Over

Year — Month	Atlantic Coast				Gulf Coast				Great Lakes				Pacific Coast			
	No.	G.T.	D.W.T.	H.P.	No.	G.T.	D.W.T.	H.P.	No.	G.T.	D.W.T.	H.P.	No.	G.T.	D.W.T.	H.P.
Total-1942	259	2,024,224	3,012,250	1,100,550	97	689,004	985,978	309,650	8	56,657	90,900	25,900	364	2,629,927	3,828,432	991,540
Total-1943	571	4,442,131	6,636,584	2,117,550	231	1,715,796	2,544,905	898,960	47	209,248	363,400	78,200	844	6,174,993	9,066,460	2,709,420
Total-1944	572	4,554,601	6,422,437	2,489,900	312	2,209,518	3,312,499	1,115,660	36	121,500	130,244	58,000	576	4,579,689	6,369,949	3,828,290
1 January	39	310,703	413,727	204,100	25	184,457	271,142	94,750	3	11,415	11,520	5,100	51	415,389	530,233	396,620
February	39	317,860	432,823	217,800	25	183,448	263,803	100,950	4	15,220	15,360	6,800	55	427,116	565,361	392,160
9 March	35	279,147	385,407	190,200	25	170,723	250,212	103,820	7	26,635	34,230	11,900	58	440,203	598,724	393,360
April	29	232,587	300,785	173,440	18	110,126	164,211	70,460	9	34,245	45,396	15,300	47	376,622	480,173	346,290
4 May	32	259,531	359,762	201,940	20	123,225	180,881	86,320	8	30,440	40,361	13,600	52	374,503	524,866	322,480
June	32	249,802	313,111	193,460	23	131,860	192,641	93,370	6	22,830	30,226	10,200	46	335,606	459,351	291,940
5 July	25	186,151	257,034	159,560	24	125,522	190,935	79,120	6	22,830	30,481	10,200	42	315,919	402,849	281,460
August	28	207,870	289,998	159,710	19	107,101	160,011	66,580	6	22,830	30,176	10,200	31	249,743	335,250	220,470
September	21	146,293	201,111	114,490	16	97,205	141,127	68,080	2	7,610	9,996	3,400	28	204,528	251,332	162,760
October	28	217,652	316,442	164,800	17	98,322	147,642	59,210	2	7,610	10,021	3,900	27	232,418	263,115	196,620
November	10	70,061	103,198	51,530	15	66,802	93,417	51,450	1	3,805	5,010	1,700	14	102,119	125,581	90,230
December	6	55,799	79,741	61,750	8	40,064	53,506	39,500					3	11,415	15,165	5,100
Total	324	2,533,456	3,453,139	1,892,780	235	1,438,855	2,109,528	913,610	54	205,470	262,777	92,300	454	3,485,581	4,552,000	3,099,490
1 January	4	37,037	49,801	35,000	1	6,165	10,607	6,600					2	13,821	19,605	12,300
February	5	39,914	53,808	41,190	2	13,239	17,245	19,800					4	33,555	47,188	33,000
9 March	2	16,479	36,627	22,350	1	6,165	10,607	6,600					5	41,198	58,196	38,700
April	2	20,321	30,341	24,200									5	44,176	62,230	42,900
4 May	3	23,326	32,814	27,990	1	8,274	11,167	9,350					4	25,993	37,363	25,500
June	5	40,304	68,648	45,200									2	14,027	20,231	15,950
6 July	5	40,696	70,574	47,650	1	8,274	11,197	9,350					3	20,130	28,999	22,550
August	3	24,575	31,404	22,550	1	8,274	11,166	9,350					1	7,924	11,405	9,350
September	2	16,248	21,752	15,950	2	12,080	16,134	11,050								
October	4	32,141	46,153	34,650	1	3,806	4,963	1,700								
November	3	25,020	33,666	21,450	3	21,624	25,485	20,400								
December	3	25,020	33,673	21,450	3	15,900	21,101	12,750								
Total	41	341,081	509,261	359,630	16	103,801	139,672	106,950					26	200,824	285,217	200,250
1 January	3	23,598	27,755	29,150	1	8,274	11,187	9,350								
February	2	15,948	24,168	18,700												
9 March	2	12,142	12,017	19,250	1	10,073	9,627	9,350					1	8,481	9,733	9,350
April	1	5,075	5,013	6,050									2	16,962	19,393	18,700
4 May	3	16,960	22,750	22,250	1	10,073	9,627	9,350								
June	2	9,893	15,764	9,050	1	5,408	7,870	6,600					1	4,106	700	4,800
7 July	1	13,365	27,928	13,200												
August					2	10,816	15,740	13,200								
September					2	8,013	11,640	13,280								
October					2	8,013	11,640	13,280								
November	1	8,564	24,427	13,000	3	13,421	19,510	19,880								
December	4	14,770	18,213	10,550	2	8,013	11,640	13,280					1	15,359	10,431	20,000
TOTAL	19	120,315	178,035	141,200	15	82,104	108,481	107,570					5	44,908	40,257	52,850

Included in totals are "Coaster" type cargo ships under 2,000 G.T. each as follows:
1942: Great Lakes—Three of 5,187 G.T., 8,400 D.W.T., 3,900 H.P.; Pacific Coast—One of 1,777 G.T., 2,800 D.W.T., 1,300 H.P.
1943: Great Lakes—Twenty-four of 42,323 G.T., 67,415 D.W.T., 31,200 H.P.; Pacific Coast—Eight of 14,216 G.T., 22,400 D. W.T., 10,400 H.P.
1944: Great Lakes—Eight of 14,960 G.T., 22,064 D.W.T., 10,400 H.P.; Gulf Coast—Twenty-five of 47,185 G.T., 72,800 D.W.T., 33,800 H.P.
1945: Gulf Coast—Twenty-six of 48,464 G.T., 72,800 D.W.T., 33,800 H.P.
SOURCE: American Bureau of Shipping.

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(Continued from Page 72)

built in the United States in the calendar year 1947:

RECAPITULATION

Type	Number	Gross Tonnage
Passenger	1	15,450
Passenger and Cargo	6	54,199
Passenger—Auto	1	4,106
Ore Carrier	1	8,558
Bulk Cargo	2	9,636
Cargo	18[1]	91,074[1]
Cargo—Refrigerated	8	46,576
Tanker	5[2]	22,662[2]
Dredge	8[3]	34,212[3]
	50	286,473

[1]—Includes 1 vessel of 3,799 tons purchased from Maritime Commission in an unfinished condition.
[2]—Includes 2 vessels of 5,896 tons purchased from Maritime Commission in an unfinished condition.
[3]—Includes 2 Dredges, 7,612, for Netherlands East Indies.

Of those vessels built in 1947, the following were for foreign owners:

Number	Total Tonnage	Country of Ownership
2 Dredges	7,612	Netherlands East Indies
2 Bulk Cargo	9,636	Panama
1 Cargo	3,799	Panama
8 Cargo	43,272	Brazil
1 Cargo	7,921	Holland
4 Cargo	10,420	France
1 Cargo	1,440	Sweden
19	84,100	

Because of the much higher cost of shipbuilding in the United States than abroad, it is not anticipated that shipbuilding in the United States for foreign account will be of any considerable volume when foreign yards are in a position to undertake such work. At the present time, foreign shipyards are filled to capacity with new work.

Contracts placed for seagoing merchant vessels and dredges in 1947 in United States yards are as follows:

Type	Number	Gross Tonnage	Displacement Tonnage
Passenger—Auto	1	1,400	
Dredges	2		22,670
Tankers	5	68,130	
Trawlers	3	5,550	
Cargo	5	6,140	
Total	16	81,220	22,670

The total number and tonnage of uncompleted vessels in hand as of December 31, 1947, is as follows:

Type	Number	Tonnage
Passenger	1	15,450
Passenger—Auto	1	1,400
Ore Carrier	3	23,674
Cargo—Refrigerated	4	20,300
Tanker	6	76,380
Cargo	12	42,364
Dredge	2	22,670
Trawler	3	5,550
Total	32	209,788

The following table shows the number of non-propelled small craft of various types by number and tonnage, contracted for in the United States in the calendar year 1947:

	Number	Gross Tons
Barges	125	60,293
Hopper Barges	71	33,225
Carfloats	17	17,505
Total	213	111,023

The following table shows by number and tonnage the self-propelled small craft of various types contracted for in the United States in the calendar year 1947:

(Continued on Page 127)

Source: Shipbuilders Council of America

CHART 1

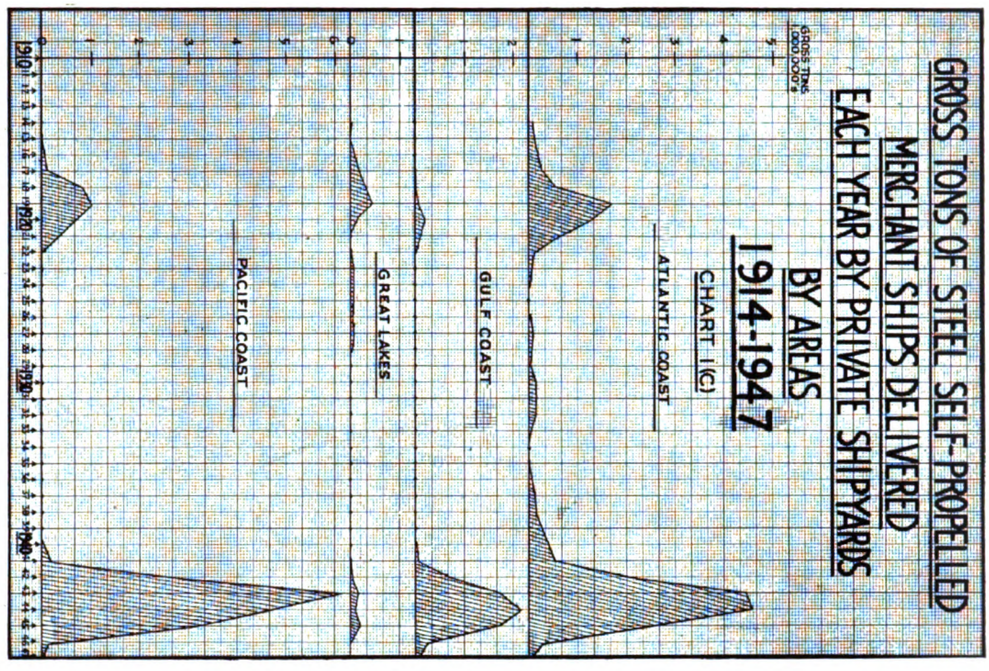


CHART 2

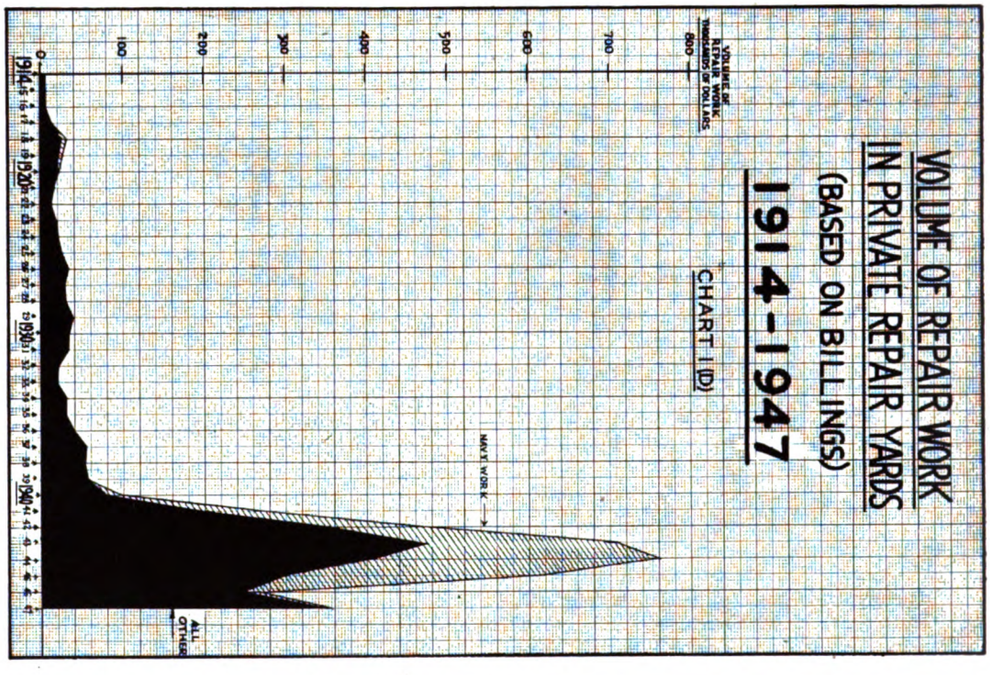
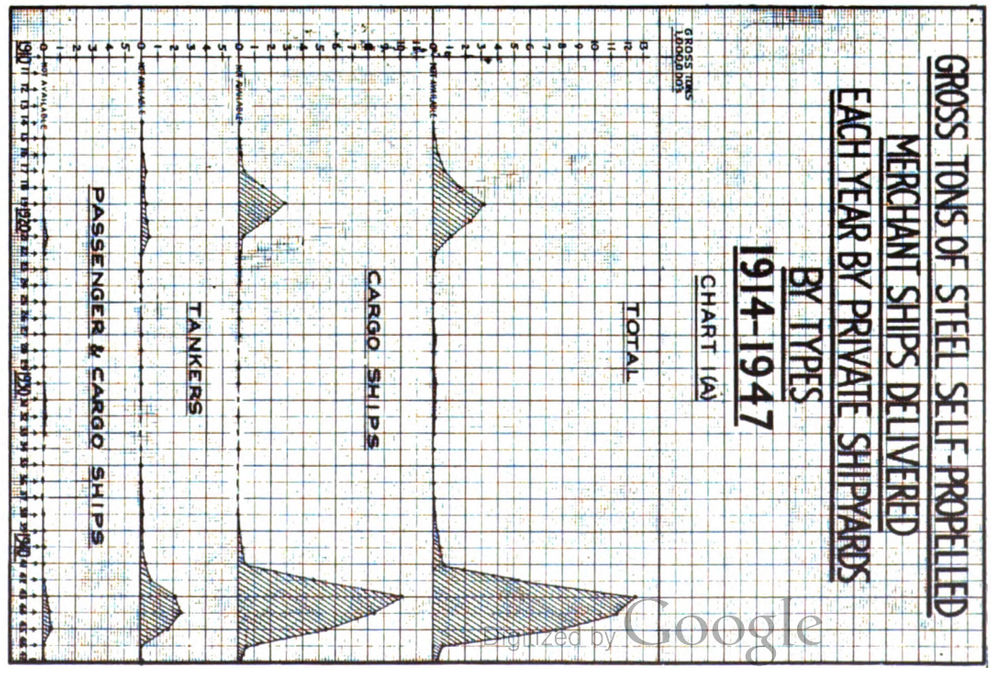


CHART 3



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U. S. SHIPS TRANSFERRED TO FOREIGN FLAG SINCE THE WAR

An exclusive LOG survey of the names, tonnage, and flag of every U.S. ship transferred to foreign registry.

Resuming a movement started in 1939 and continuing until shortly before the United States was drawn into the war in December, 1941, American ship owners have, since the end of the war in August, 1945, sold and/or transferred to foreign flag a considerable amount of old tonnage, most of which was built for the Emergency Fleet Corporation during and after World War I. When the war clouds began gathering over Europe in 1938, a demand for tonnage of all types was created. Freight rates and ship charters ascended and reached peaks not touched in twenty years or more. Bidding started for laid up American cargo ships and tonnage being operated by private owners. Vessels were shortly selling for as much as the purchase price paid eighteen to twenty years previously.

When the Maritime Commission shipbuilding program, which started in 1938, began producing ships, American operators were able to release a large number of old vessels for sale to foreign interests. With the entry of the United States into the war all merchant tonnage was requisitioned and further sales abroad stopped. In the period between September 1, 1939, and July 1, 1941, when the sales to foreign flag were ordered stopped, 267 merchant vessels of 1,443,208 gross tons and about 2,000,000 deadweight tons were transferred to foreign owners.

At the end of the war in 1945 a considerable demand from foreign interests arose for tonnage of any type to replace war-damaged shipping and fleets sunk. Ship owners were able to sell twenty-five year old, 11 to 12 knot cargo ships, long since amortized, at prices ranging from $20 to $40 a deadweight ton. The Alaska Packers Association sold the BERING, a warbuilt cargo ship of about 11,500 deadweight tons, completed in 1920, for $415,000. Another similar warbuilt cargo ship, the POMONA, of 11,550 deadweight tons, completed in 1920, owned by the Weyerhaeuser Steamship Company, went for $352,000. The Red Salmon Canning Company got $215,000 for the AMERICAN STAR, a 7,500 deadweight ton cargo ship completed in 1919. The 9,500 deadweight ton cargo ships NISHMAHA and WINSTON-SALEM, owned by Lykes Bros. Steamship Company, completed in 1919 and 1920, brought $200,000 and $150,000 respectively.

Tankers have been bringing still higher prices and old combinatioin passenger and cargo ships in fair condition have returned in some cases almost as much as their original construction cost. As a result of this development, there have been but few cases of vessels being traded in to the Maritime Commission against the purchase price of new tonnage since the end of the war, the owner being able to sell his old tonnage much more advantageously to foreign interests. This development has, of course, benefited the Maritime Commission, the taxpayer, and the American ship owner.

Postwar Transfers

Since the end of the war in 1945 American ship owners have sold and or transferred to foreign flag 222 documented American flag merchant vessels of 1,096,450 gross tons and 1,620,627 deadweight tons, each of 1,000 gross tons and over. Numerous smaller vessels have also been sold to foreign account. Of the 222 vessels transferred to foreign flag, all but ten were constructed before the war. Of these, 156 are cargo ships of 726,827 gross tons and 1,099,500 deadweight tons; 13 are combination passenger and cargo ships of 61,581 gross tons and 54,102 deadweight tons; 52 are tankers of 305,722 gross tons and 464,525 deadweight tons; and 1 carferry of 2320 gross tons.

The average age of the 222 ships transferred to foreign flag is 28.4 years, the oldest vessel being 54 years old. The tankers average 24.2 years of age; the cargo ships 29.9 years; and the combination passenger and cargo ships 27 years. Sixty-two percent of the vessels transferred, or 138, were products of World War I, being constructed for the Emergency Fleet Corporation, U. S. Shipping Board. Another 23 percent, or 53, were constructed for private interests, mostly in American shipyards, prior to World War I. The balance of 15 percent, or 31, were completed in the period between the two wars, with the exception of the ten warbuilt vessels enumerated completed in 1944-1945.

Famous Passenger Ships

The oldest of the combination passenger and cargo vessels, and incidentally the largest, to go to foreign flag was the PRESIDENT JOHNSON of the American President Lines, completed in 1904. Youngest of the lot of 13 passenger ships was the MEXICO, completed in 1932 for the Colombian Line by the Newport News Shipbuilding and Dry Dock Company, and later acquired by the AGWI Lines when the Colombian Lines was forced out of business due to the cancellation by the Government of the mail pay subsidy contracts. Prominent in the lot is the New York-Miami express liner SHAWNEE, constructed for the Clyde Line Florida winter tourist trade, and capable of over 18 knots speed. Another well known coastal liner to go is the FAIRFAX of the Merchants and Miners Transportation Company. The CUBA, specially built for the overnight run between Florida and Cuba of the Peninsular and Occidental Line, has been sold to Italian flag. Most of the passenger carrying vessels engaged in the prewar trade to Alaska have now been sold foreign, these including the NORTHLAND, NORTH COAST, DAVID W. BRANCH, COLUMBIA, CORDOVA, and LAKINA. Oldest of the tankers to be transferred foreign was the ALABAMA of The Texas Company, built in 1901.

Lykes Bros. Steamship Company has disposed of 11 documented vessels of 61,000 gross tons; Atlantic, Gulf & West Indies Steamship Lines 9 vessels of 38,000 gross tons; American-Hawaiian Steamship Company 9 vessels of 57,000 gross tons; Matson Navigation Company 9 vessels of 49,000 tons. A total of 101 American ship owners have participated in this wholesale unloading of old ships which had outlived their usefulness in American trade but which will be of value to their new owners for another period of years.

These vessels have been transferred to 25 foreign flags, the greatest number

Table 1

Number and Tonnage of Each Type of Privately Owned Documented American Flag Merchant Vessels of 1,000 Gross Tons and Over Sold and/or Transferred to Foreign Flag Since the End of the War in August 1945

Type	Number	Gross Tons	Average Gross Tons	Deadweight Tons	Average Deadweight Tons
Passenger and cargo	13	61,581	4,737	54,102	4,161
Cargo	156	726,827	4,659	1,099,500	7,048
Tanker	52	305,722	5,879	464,525	8,933
Carferry	1	2,320	2,320	2,500	2,500
Totals	222	1,096,450	4,938	1,620,627	7,300

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going to Panama. A total of 104 vessels went to Panamanian flag, aggregating 559,882 gross tons and 830,210 deadweight tons, or 46 percent of the grand total transferred to all flags, and 50 percent of the tonnage involved. About 10 percent of the total tonnage went to the Chinese flag, these totaling 24 vessels of 99,153 gross tons and 144,015 deadweight tons.

Remaining American Flag Ships

American ship owners still own approximately 100 of the prewar built tankers and cargo ships flying the American flag. The Maritime Commission also has a large number of vessels in this category, which were acquired from private owners by requisition for title during the war years. At present there are 110 of these ships in the Government laid-up fleet sites. A small percentage of these vessels were acquired by the Commission under the trade-in conditions of the Merchant Marine Act of 1936 as part payment in the purchase of new vessels by American ship owners. These latter will have to be scrapped in accordance with the law requirements. Other old vessels now in the laid-up fleet have been so radically altered for military war service that it will not be economically feasible, in view of their age, to reconvert them for commercial service. Some few have been badly damaged and will eventually be scrapped.

Private owners have in the last two years sold many old vessels for scrapping. The Maritime Commission has also sold a considerable number of old ships for scrapping purposes, and has been following a consistent though rather slow program for disposal of these vessels and the newer warbuilt badly damaged ships. Demand for scrap steel has been great and prices paid per ton have been at a record peak for the past six months.

Another cause, and a large contributing reason, for the disappearance and dissipation of the prewar American merchant marine is the great number of casualties suffered during the war. American flag prewar built vessels lost in the course of the war totaled about 490 of approximately 2,500,000 gross tons.

From the above facts the tremendous turnover and replacement of the prewar American merchant fleet can be readily understood. While on September 1, 1939, before the start of the war in Europe, there existed under the American flag 1379 seagoing merchant vessels of 1000 gross tons and over, these totalling 8,129,766 gross tons and 11,681,700 deadweight tons, only approximately 25 percent still fly the American flag. This was at the time the second largest national merchant fleet in the world. At the start of the war, however, the American merchant fleet as a whole had reached the obsolescence stage. The average age at that time for the fleet was about 20 years. The tanker units averaged 17 years of age; the combination passenger and cargo ships about 18 years; and the cargo ships 20 years.

While American ship owners have, through the sale of old tonnage, assisted in the postwar reconstruction of foreign flag fleets, the Maritime Commission has, of course, been the biggest factor in meeting these requirements. As of March 1, 1948, a total of 1,022 warbuilt merchant vessels owned by the United States Government have been sold to foreign flag and titles transferred under the terms of the Merchant Ship Sales Act of 1946. These vessels total 7,338,195 gross tons and 10,925,128 deadweight tons. Distribution by flag of the vessels already sold is shown in Table 4.

Conclusion

The foreign market which developed both before and after World War II for old American flag merchant tonnage has enabled many ship owners to dispose of vessels which otherwise would in the next few years have had to be laid up or scrapped. The comparatively high prices received for these old vessels has been an important factor in enabling some American shipping lines to acquire new and modern types of vessels from the Maritime Commission warbuilt fleet and, in some few instances, to construct new tonnage. However, the volume of sales of old ships to foreign interests has contracted considerably in recent months. This is due mainly to the fact that the early demand has been satisfied and to the development of other factors, such as the completion of new ships in foreign shipyards and the availability of Maritime Commission tonnage since the middle of 1946.

Within the next few years there will remain but few prewar built merchant vessels under the American flag. The usefulness of those still operating is rapidly reaching a point where they will have to be scrapped, laid up or sold foreign. Therefore, by 1950 practically the entire American merchant marine should be composed of vessels not over ten years old, the exceptions being a few privately built tankers and combination passenger and cargo vessels and some cargo ships built for the Maritime Commission, all completed within the decade before the start of the war. This postwar fleet will in general be composed of types having from 25 to 50 percent greater unit capacity and speed than the vessels employed in the prewar American merchant marine.

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Belgian Merchant Fleet Increases

Belgium's merchant fleet now exceeds the 1939 figures, but is still smaller than in May, 1940, when the Germans invaded.

It had been rebuilt to 356,000 tons last year.

From 91 units, aggregating 359,500 g.r.t. on Sept. 1, 1939, it expanded to 100, totaling 422,300 g.r.t. by May, 1940, but only 62 vessels, of 269,500 g.r.t. were left on June 30, 1946.

An expansion to at least 850,000 g.r.t. is planned by the Belgian government. A bill recently introduced into the Belgian Chamber provides for State subsidies to achieve this.

Table 2

Number and Tonnage by Type of Privately Owned Documented American Flag Merchant Vessels of 1,000 Gross Tons and Over Sold and/or Transferred to Each Foreign Flag Since the End of the War in August, 1945

Flag and Type	Number	Gross Tons	Deadweight Tons
Argentina			
Cargo	5	26,779	41,119
Tanker	2	12,255	18,120
Total	7	39,034	59,239
Belgium			
Cargo	1	6,679	9,000
Brazil			
Cargo	2	4,216	5,700
Tanker	1	1,551	2,050
Total	3	5,767	7,750
Canada			
Cargo	9	37,086	52,800
Tanker	3	5,464	8,425
Total	12	42,550	61,225
Chile			
Cargo	4	16,222	23,900
China			
Passenger and cargo	3	9,797	11,027
Cargo	17	58,881	88,388
Tanker	4	30,475	44,600
Total	24	99,153	144,015
Denmark			
Tanker	1	9,153	14,363
Finland			
Tanker	3	20,972	31,200
Cargo	3	12,556	16,700
Total	6	33,528	47,900
Great Britain			
Cargo	1	2,286	3,350
Tanker	3	3,381	6,000
Total	4	5,667	9,350
Greece			
Cargo	1	2,632	3,500
Honduras			
Cargo	10	59,043	91,432
Carferry	1	2,320	2,500
Tanker	1	6,448	9,859
Total	12	67,811	103,791
Italy			
Passenger and cargo	1	2,472	1,350
Cargo	8	46,315	75,465
Tanker	7	44,907	66,229
Total	16	93,694	143,044
Mexico			
Tanker	2	13,665	21,000
Morocco			
Cargo	1	4,986	8,015
Norway			
Passenger and cargo	1	1,255	1,668
Tanker	2	9,300	14,733
Total	3	10,555	16,401
Panama			
Passenger and cargo	4	33,134	28,757
Cargo	80	393,008	595,120
Tanker	20	133,740	206,333
Total	104	559,882	830,210
Peru			
Cargo	1	1,899	1,800
Philippines			
Passenger and cargo	3	9,687	6,700
Cargo	3	8,577	12,700
Total	6	18,264	19,400
Sweden			
Cargo	4	10,451	15,760
Switzerland			
Tanker	2	11,571	17,538
Turkey			
Passenger and cargo	1	5,236	4,600
Uruguay			
Cargo	1	6,997	10,000
U.S.S.R.			
Cargo	4	21,705	35,751
Venezuela			
Tanker	1	2,840	4,075
Yugoslavia			
Cargo	1	6,509	9,000
Grand Total	222	1,096,450	1,620,627

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Table 3

Age of Privately Owned Documented American Flag Merchant Vessels of 1,000 Gross Tons and Over Sold and/or Transferred to Foreign Flag Since the End of the War in August, 1945

Year Built	Cargo Ships	Tankers	Combination Passenger and Cargo Ships	Total
1893	1	..	..	1
1898	2	..	..	2
1899	3	..	..	3
1900	1	..	..	1
1901	3	1	..	4
1902	3	..	..	3
1903	1	1	..	2
1904	2	..	1	3
1905	1	..	..	1
1907	2	..	1	3
1908	2	..	..	2
1909	3	..	..	3
1911	2	..	..	2
1912	..	1	1	2
1913	3	3	1	7
1914	1	1	..	2
1915	..	..	1	1
1916	2	2	..	4
1917	7	2	..	9
1918	22	4	..	26
1919	40	6	..	46
1920	41	9	..	50
1921	7	8	1	16
1923	2	3	2	7
1924	1	..	..	1
1926	1	..	1	2
1927	..	..	1	1
1928	..	..	1	1
1929	..	..	1	1
1930	..	1	..	1
1931	1	1	..	2
1932	..	..	1	1
1936	..	1	..	1
1937	..	1	..	1
1944	3	5	..	8
1945	..	2	..	2
Totals	157	52	13	222
Average age	29.9 years	24.5 years	27.0 years	28.4 years

Table 4

Distribution by Flag of War-Built Merchant Vessels Sold to Foreign Interests by the United States Maritime Commission, Under the Terms of the Merchant Ship Sales Act of 1946, and Titles Transferred up to March 1, 1948

Flag	Cargo			Tanker			Total		
	No.	Gross Tons	Deadweight Tons	No.	Gross Tons	Deadweight Tons	No.	Gross Tons	Deadweight Tons
Argentina	19	143,681	201,507	1	3,160	3,925	20	146,841	205,432
Belgium	14	104,806	149,269	1	10,296	16,287	15	115,102	165,556
Brazil	12	45,676	63,534	....	.....	.....	12	45,676	63,534
Canada	....	.....	.....	7	72,535	114,463	7	72,535	114,463
Chile	4	24,856	34,923	....	.....	.....	4	24,856	34,923
China	18	86,921	127,818	....	.....	.....	18	86,921	127,818
Columbia	8	30,434	43,188	....	.....	.....	8	30,434	43,188
Cuba	4	15,214	23,797	....	.....	.....	4	15,214	23,797
Denmark	19	129,344	177,601	....	.....	.....	19	129,344	177,601
Egypt	2	14,354	4,732	....	.....	.....	2	14,354	4,732
Finland	2	14,352	21,000	....	.....	.....	2	14,352	21,000
France	79	554,428	817,051	12	123,568	197,725	91	677,996	1,014,776
Great Britain	167	1,034,742	1,540,235	51	527,230	836,828	218	1,561,972	2,377,063
Greece	100	712,457	1,044,595	5	51,978	82,253	105	764,435	1,126,848
Honduras	27	184,098	272,652	....	.....	.....	27	184,098	272,652
India	11	81,600	116,337	....	.....	.....	11	81,600	116,337
Iceland	1	3,805	6,013	....	.....	.....	1	3,805	6,013
Italy	90	646,813	949,359	13	133,225	214,411	103	780,038	1,163,770
Netherlands	69	475,718	678,907	7	43,968	64,857	76	519,686	743,764
New Zealand	1	5,158	7,312	....	.....	.....	1	5,158	7,312
Norway	83	501,200	721,329	17	175,537	279,887	100	676,737	1,001,216
Panama	74	510,719	748,321	64	652,695	1,041,422	138	1,163,414	1,789,743
Peru	8	34,187	49,792	....	.....	.....	8	34,187	49,792
Philippines	2	13,422	17,841	....	.....	.....	2	13,422	17,841
Poland	1	7,612	10,719	....	.....	.....	1	7,612	10,719
Portugal	3	5,662	8,343	....	.....	.....	3	5,662	8,343
Sweden	5	25,836	36,156	....	.....	.....	5	25,836	36,156
Turkey	8	34,168	46,795	2	13,710	20,848	10	47,878	67,643
Union of So. Africa	6	44,382	63,232	2	20,896	33,353	8	65,278	96,585
Uruguay	....	.....	.....	2	20,592	32,586	2	20,592	32,586
Venezuela	....	.....	.....	1	3,160	3,925	1	3,160	3,925
Totals	837	5,485,645	7,982,358	185	1,852,550	2,942,770	1022	7,338,195	10,925,128

Table 5

Documented Privately Owned American Flag Merchant Vessels of 1,000 Gross Tons and Over Sold and/or Transferred to Foreign Flag Since End of the War in August 1945

Name	Year Built	Type	Gross Tons	Dead Weight Tons	Flag Transferred To
Agwilines, Inc.					
MEDINA	1914	Cargo	5,426	7,175	Panama
SHAWNEE	1927	Passenger	6,209	3,100	Panama
Alaska Packers Association					
BERING	1920	Cargo	7,631	11,500	Honduras
CHIRIKOF	1908	Cargo	6,509	9,000	Yugoslavia
DELAROF	1920	Cargo	6,021	9,600	Panama
Alaska Steamship Company					
COLUMBIA	1907	Passenger	5,270	4,907	Panama
CORDOVA	1912	Passenger	2,089	2,877	China
DERBLAY	1920	Cargo	3,475	5,075	China
LAKINA	1913	Passenger	2,059	2,400	China
SUTHERLAND	1918	Cargo	4,716	7,387	Panama
Alaska Transportation Company					
TOKN	1920	Cargo	1,364	1,450	Panama
TYEE	1920	Cargo	1,374	1,450	Panama
Alcoa Steamship Company					
ALCOA CUTTER	1918	Cargo	4,965	7,500	Panama
ALCOA MASTER	1919	Cargo	5,114	7,500	Panama
ALCOA PILOT	1919	Cargo	4,869	7,564	China
ALCOA SCOUT	1919	Cargo	4,886	7,500	Honduras
ALCOA TRADER	1920	Cargo	4,986	8,015	Morocco
ALCOA VOYAGER	1919	Cargo	6,126	8,822	Argentina
Alpha Corporation					
ALPHA	1919	Tanker	5,771	8,974	Panama
American Eastern Corporation					
STEEL ELECTRICIAN	1926	Cargo	1,694	3,400	Panama
American Export Line					
EXILONA	1919	Cargo	4,971	7,500	U.S.S.R.
American Foreign Steamship Corp.					
LIBERTY GLO	1919	Cargo	4,979	7,800	Panama
WILDWOOD	1919	Cargo	5,042	7,825	Panama

Table 5 (continued)

Name	Year Built	Type	Gross Tons	Dead Weight Tons	Flag Transferred To
American-Hawaiian Steamship Company					
ALABAMAN	1921	Cargo	7,004	10,000	Panama
ARIZONAN	1920	Cargo	6,835	10,375	Panama
CAROLINIAN	1921	Cargo	6,997	10,000	Uruguay
COLUMBIAN	1913	Cargo	4,954	9,200	U.S.S.R.
GEORGIAN	1920	Cargo	5,825	10,200	Panama
KANSAN	1918	Cargo	4,870	9,450	Panama
PANAMAN	1913	Cargo	6,535	9,920	Italy
UTAHAN	1919	Cargo	7,031	10,000	Panama
FLORIDIAN	1920	Cargo	6,998	10,000	Panama
American President Lines					
PRESIDENT JOHNSON	1904	Passenger	16,111	15,000	Panama
American Sugar Refining Company					
DIXIANO	1921	Cargo	4,323	6,300	Honduras
American Trading & Production Corp.					
AMERICAN TRADER	1923	Tanker	8,862	12,940	Panama
American West African Line					
ZAREMBO	1919	Cargo	4,957	7,632	Panama
Atlantic Gulf and West Indies Lines					
AGWIDALE	1918	Cargo	4,763	7,200	China
AGWISTAR	1919	Cargo	4,661	7,300	China
COROZAL	1911	Cargo	3,109	4,650	China
MEXICO	1932	Passenger	5,236	4,600	Turkey
MONTOST	1911	Cargo	3,109	4,650	China
NORFOLK	1916	Cargo	2,453	2,515	China
OSAGE	1919	Cargo	2,649	4,050	China
Baltimore Insular Line					
GOVERNOR JOHN LIND	1918	Cargo	3,431	5,040	Italy
Barber Steamship Lines					
CATHLAMET	1919	Cargo	5,869	9,600	Panama
Horace X. Baxter Steamship Company					
A. M. BAXTER	1919	Cargo	2,428	4,200	Panama
Bernuth Lembcke Company					
TORRES	1917	Tanker	4,943	8,100	Panama
Bessemer Trust Company					
ARDMORE	1913	Tanker	7,035	10,000	China
Cleveland Tankers, Inc.					
MERCURY	1937	Tanker	1,518	2,400	Canada

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Table 5 (continued)

Name	Year Built	Type	Gross Tons	Dead Weight Tons	Flag Transferred To
Crescent Towing & Salvage Co.					
AMERICAN FISHER	1912	Tanker	4,779	6,920	Italy
Bison Steamship Corporation					
FRED L. HEWITT	1908	Cargo	5,539	8,000	Canada
A. H. Bull Steamship Company					
CATHERINE	1918	Cargo	2,286	3,350	Great Britain
ELLENOR	1920	Cargo	3,482	5,100	Panama
MARJORY	1919	Cargo	2,323	3,760	Panama
Arthur B. Cahill					
EDWIN CHRISTENSON	1918	Cargo	5,670	8,800	Panama
W. R. Chamberlin					
STANWOOD	1916	Cargo	1,129	1,100	Philippine
Cities Service Oil Co.					
CITIES SERVICE KOOLMOTOR	1918	Tanker	6,762	10,050	Panama
HAGOOD	1919	Tanker	6,866	10,238	Panama
Coastal Steamship Company					
LAKE FRANCIS	1918	Cargo	2,013	3,000	China
Coastwise Line					
COAST SHIPPER	1920	Cargo	3,286	5,500	China
Coastwise Steamship and Barge Company					
JAMES GRIFFITHS	1920	Cargo	3,321	5,000	China
Commercial Molasses Corporation					
COSTANA	1920	Tanker	5,030	7,825	Panama
Continental Oil Company					
GARNET HULINGO	1920	Tanker	7,036	10,600	Finland
Construction Aggregates Corporation					
LA PAZ	1920	Cargo	6,679	9,000	Belgium
Dolores Steamship Company					
WILLIAM M. CONNELLY	1901	Cargo	3,717	5,500	Canada
Durango Steamship Corporation					
DURANGO	1919	Tanker	6,986	10,000	Finland
Eastern Gas and Fuel Associates					
SEWALLS POINT	1919	Collier	5,431	8,742	Panama
FELIX TAUSSIG	1917	Collier	5,965	9,500	Panama
WILLIAM N. PAGE	1918	Collier	5,438	8,742	Panama
Eastern Steamship Lines					
FALMOUTH	1920	Cargo	2,606	4,100	Panama
SANDWICH	1919	Cargo	2,606	4,050	Panama
WILTON	1923	Cargo	1,827	1,340	Panama
Ford Motor Company					
LAKE ORMOC	1918	Cargo	2,380	3,500	Sweden
Grand Trunk-Milwaukee Carferry Company					
GRAND HAVEN	1903	Carferry	2,320	2,500	Honduras
Great Lakes Transit Corporation					
ALFRED H. SMITH	1907	Cargo	4,698	6,800	Chile
FRED W. SAYENT	1905	Cargo	3,901	6,000	Chile
GEORGE D. DIXON	1900	Cargo	4,090	6,000	Chile
MEXOIL	1918	Tanker	1,370	2,420	Panama
UTICA	1904	Cargo	3,533	5,100	Chile
J. E. GORMAN	1909	Cargo	4,021	5,500	Panama
Sendel G. Gray					
MORLEN	1918	Cargo	2,186	3,760	Sweden
Griffiths Steamship Company					
STANLEY A. GRIFFITHS	1920	Cargo	3,237	5,000	Sweden
Grosvenor-Dale Company					
MALAY	1921	Tanker	8,206	12,000	Panama
MALABAR	1914	Tanker	8,465	11,520	China
SWIFTARROW	1921	Tanker	8,206	12,000	Panama
Gulf Oil Corporation					
GULFBREEZE	1923	Tanker	6,651	9,900	Italy
GULFMAID	1917	Tanker	5,225	7,500	Argentina
Hammond Lumber Company					
ASTORIA	1918	Cargo	2,224	3,760	Panama
J. R. Hanify Company					
ANNE HANIFY	1920	Cargo	1,343	2,000	Panama
Hillcone Steamship Company					
BRANDYWINE	1918	Tanker	4,931	7,000	Panama
J. J. CONEY	1920	Tanker	5,168	7,500	Switzerland
Inter-Island Steam Navigation Company					
HALEAKALA	1923	Passenger	3,679	1,800	Philippine
WAIALEALE	1928	Passenger	3,092	1,800	Philippine
Isbrandtsen Steamship Company					
REMSEN HEIGHTS	1920	Cargo	2,397	2,700	Brazil
Isthmian Steamship Company					
MEMPHIS CITY	1921	Cargo	5,686	9,650	Honduras
ENSLEY CITY	1920	Cargo	6,157	9,600	Philippine
MOBILE CITY	1920	Cargo	6,157	9,600	Panama
STEEL TRADER	1920	Cargo	5,686	9,450	U.S.S.R.
STEEL ENGINEER	1920	Cargo	5,686	9,450	Panama
Wallace Langley					
NORTH PACIFIC	1919	Cargo	2,632	3,500	Greece
Luckenbach Steamship Company					
HORACE LUCKENBACH	1919	Cargo	6,475	12,995	Italy
JACOB LUCKENBACH	1918	Cargo	5,817	11,590	Panama
ROBERT LUCKENBACH	1919	Cargo	8,179	12,995	Italy
WILLIAM LUCKENBACH	1913	Cargo	6,938	11,200	Italy
Lykes Bros. Steamship Company					
AMERICAN PRESS	1920	Cargo	5,131	8,000	Italy
AQUARIUS	1920	Cargo	6,094	9,601	U.S.S.R.
CHESTER VALLEY	1919	Cargo	5,078	8,015	Italy
CITY OF OMAHA	1920	Cargo	6,124	9,841	Honduras
GENEVIEVE LYKES	1919	Cargo	2,659	4,050	Panama
MARGARET LYKES	1919	Cargo	3,537	5,000	Panama

Table 5 (continued)

Name	Year Built	Type	Gross Tons	Dead Weight Tons	Flag Transferred To
Lykes Bros. Steamship Company (continued)					
NEMAHA	1920	Cargo	6,501	9,841	Honduras
NISHMAHA	1919	Cargo	6,040	9,425	Panama
VOLUNTEER	1918	Cargo	7,717	11,850	Panama
WESTERN QUEEN	1918	Cargo	5,853	8,614	Panama
WINSTON-SALEM	1920	Cargo	6,223	9,841	Panama
Libby McNeil & Libby					
DAVID W. BRANCH	1915	Passenger	5,544	5,750	Panama
Matinicock Steamship Corporation					
MATINICOCK	1913	Tanker	6,769	11,080	China
Matson Navigation Company					
DIAMOND HEAD	1918	Cargo	5,859	8,600	Panama
MAKAWELI	1919	Tanker	2,630	4,200	Canada
MAKIKI	1917	Cargo	5,924	9,530	Panama
MAKUA	1920	Cargo	3,275	5,500	China
MALIKO	1918	Cargo	6,847	10,325	Panama
MAUNAIVILI	1921	Cargo	7,409	9,625	Panama
MAUNA KEA	1919	Cargo	6,064	9,400	Panama
WAIKIO	1919	Cargo	6,049	8,800	Panama
WAIMEA	1919	Cargo	5,670	8,800	Panama
Merchants and Miners Transportation Co.					
FAIRFAX	1926	Passenger	5,649	5,750	China
NORLAGO	1919	Cargo	2,606	4,100	China
Mexico Shipping and Trading Company					
CACALILA	1919	Tanker	6,913	10,000	Mexico
TOTECO	1916	Tanker	6,752	11,000	Mexico
Munargo Line Company					
LA PERLA	1924	Cargo	3,792	8,180	Panama
National Petroleum Transport Corp.					
EDWIN B. DeGOLIA	1917	Cargo	3,321	4,992	Panama
TRANSOIL	1936	Tanker	1,572	2,550	Panama
Nelson Line					
CHESTER	1931	Cargo	1,819	3,000	Brazil
Newtex Steamship Corporation					
REDWOOD	1917	Cargo	1,899	1,800	Peru
National Bulk Carriers					
PAN DELAWARE	1918	Tanker	8,128	13,250	Norway
North American Steamship Company					
HAMLIN F. McCORMICK	1919	Cargo	3,317	5,000	China
Northland Transportation Company					
NORTH COAST	1923	Passenger	2,916	3,100	Philippine
NORTH HAVEN	1919	Cargo	4,653	6,631	Panama
NORTHLAND	1929	Passenger	1,255	1,668	Norway
Oliver J. Olson & Company					
WHITNEY OLSON	1917	Cargo	1,558	2,300	Panama
Overlakes Freighting Corporation					
W. W. ATTERBURY	1909	Cargo	4,142	5,500	Finland
DANIEL WILLARD	1907	Cargo	4,185	5,500	Panama
ARTHUR ORR	1893	Cargo	2,745	3,500	Canada
P. E. CROWLEY	1899	Cargo	4,404	5,700	Finland
H. A. SCANDRETT	1909	Cargo	4,010	5,500	Finland
Pacific American Fisheries					
MARY D	1920	Cargo	4,861	7,500	Panama
Pioneer Steamship Company					
MARTIN MULLEN	1904	Cargo	4,093	5,500	Canada
W. D. CALVERLEY, JR.	1902	Cargo	3,851	5,000	Canada
Pacific Atlantic Steamship Company					
JEFFERSON MYERS	1920	Cargo	7,582	11,600	Panama
Parry Navigation Company					
DEBRIO	1919	Cargo	5,052	7,825	Panama
DEL DURO	1920	Cargo	5,107	7,825	Panama
ESTHER	1919	Cargo	4,999	7,800	Panama
Peninsular & Occidental Steamship Company					
CUBA	1921	Passenger	2,472	1,350	Italy
Permanente Steamship Company					
PHILIPPA	1902	Cargo	10,375	15,000	Panama
Pittsburgh Steamship Company					
DOUGLAS HOUGHTON	1899	Cargo	4,515	6,700	Canada
JOHN A. ROEBLING	1898	Cargo	4,152	6,100	Canada
JOHN FRITZ	1898	Cargo	4,152	6,100	Canada
MAUNALOA	1899	Cargo	4,322	6,400	Canada
Pope and Talbot					
ABSAROKA	1918	Cargo	5,695	8,800	Panama
CHARLES R. McCORMICK	1920	Cargo	6,027	9,601	Panama
PETER HELMS	1920	Cargo	3,326	5,000	Panama
POINT SAN PABLO	1920	Cargo	3,280	5,000	Panama
Pure Oil Company					
W. W. MILLS	1921	Tanker	6,816	10,171	Panama
Red Salmon Canning Company					
AMERICAN STAR	1919	Cargo	5,354	7,500	Panama
Richfield Oil Corporation					
PAT DOHENY	1921	Tanker	7,053	10,500	Italy
TOPILA	1913	Tanker	5,125	8,100	Panama
Seas Shipping Company					
ALGIC	1920	Cargo	5,196	8,822	Argentina
ROBIN ADAIR	1919	Cargo	6,895	10,400	Panama
Sinclair Refining Company					
SAMUEL L. FULLER	1921	Tanker	6,950	10,600	Finland
Socony Vacuum Oil Company					
COMET	1930	Tanker	9,153	14,363	Denmark
DAYLIGHT	1931	Tanker	9,180	14,500	Panama
Sabine Transportation Company					
C. B. WATSON	1920	Tanker	5,607	8,400	Italy
R. P. SMITH	1916	Tanker	6,226	10,000	Italy

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Table 5 (continued)

Name	Year Built	Type	Gross Tons	Dead Weight Tons	Flag Transferred To
Standard-Vacuum Oil Company					
MEI NAN	1945	Tanker	1,127	2,000	British
MEI PING	1944	Tanker	1,127	2,000	British
MEI SHAN	1945	Tanker	1,127	2,000	British
Solano Steamship Company					
LAWRENCE PHILIPS	1918	Cargo	2,117	3,300	Panama
South Atlantic Steamship Line					
FLUOR SPAR	1919	Cargo	5,055	7,800	Panama
SCHOHARIE	1919	Cargo	4,971	7,825	Argentina
SHICKSHINNY	1919	Cargo	5,103	7,825	Argentina
TULSA	1919	Cargo	5,083	7,825	Argentina
Antonio C. Sralla					
RYDER HANIFY	1920	Cargo	1,343	2,350	Panama
Standard Oil Company, N. J.					
ESSO ELIZABETH	1944	Tanker	10,296	16,765	Panama
ESSO KNOXVILLE	1944	Tanker	10,296	16,765	Panama
ESSO PORTSMOUTH	1944	Tanker	10,296	16,765	Panama
Standard Oil Company of California					
STANDARD SERVICE	1923	Tanker	1,316	1,825	Canada
States Marine Corporation					
CHIPANA	1920	Cargo	3,280	5,000	Panama
FREDERIC E. IVES	1944	Cargo	7,247	10,800	Panama
GREEN MOUNTAIN	1919	Cargo	4,988	7,825	Panama
LONE STAR	1919	Cargo	5,101	7,825	Panama
NEGLEY D. COCHRAN	1944	Cargo	7,240	10,500	Panama
THOMAS H. SUMNER	1944	Cargo	7,176	10,800	Panama
WOLVERINE	1919	Cargo	4,990	7,800	Panama
CURACA	1920	Cargo	3,280	5,000	Panama
Swiftlight Steamship Corporation					
SWIFTLIGHT	1921	Tanker	8,206	12,000	China
The Texas Company					
ALABAMA	1901	Tanker	2,840	4,075	Venezuela
EL CARIBE	1944	Tanker	1,172	1,483	Norway
ILLINOIS	1921	Tanker	6,448	9,859	Honduras
MISSISSIPPI	1920	Tanker	6,416	9,940	Panama

Table 5 (continued)

Name	Year Built	Type	Gross Tons	Dead Weight Tons	Flag Transferred To
The Texas Company (Cont'd)					
REAPER	1920	Tanker	6,407	9,940	Panama
TENNESSEE	1920	Tanker	6,403	10,038	Switzerland
WASHINGTON	1920	Tanker	7,030	10,620	Argentina
MARYLAND	1903	Tanker	1,551	2,050	Brazil
Thompson Salmon Company					
WILLIAM L. THOMPSON	1920	Cargo	6,202	8,584	China
Tidewater Associated Oil Company					
TIDE PENN	1920	Tanker	7,248	10,259	Italy
TYDOLGAS	1921	Tanker	7,343	10,250	Italy
Tidewater Commercial Company					
PERMANENTE	1902	Cargo	10,005	13,000	Panama
Trimountain Steamship Corporation					
TRIMOUNTAIN	1919	Tanker	6,389	9,290	Panama
Union Sulphur Company					
HENRY D. WHITON	1921	Cargo	4,548	7,300	Italy
United Fruit Steamship Corporation					
PAN CRESCENT	1901	Cargo	4,570	3,964	Panama
PAN YORK	1901	Cargo	4,570	3,964	Panama
Universal Navigation Corporation					
UNACO	1918	Cargo	4,078	6,000	China
Warrior and Gulf Navigation Company					
STEELMOTOR	1923	Cargo	1,695	2,700	China
West Coast Steamship Company					
WEST COAST	1917	Cargo	1,430	2,500	Panama
Weyerhaeuser Steamship Company					
HANLEY	1920	Cargo	7,583	11,600	Honduras
HEGIRA	1919	Cargo	7,588	11,600	Honduras
PENNSYLVANIA	1920	Cargo	5,595	8,800	Panama
POMONA	1920	Cargo	7,583	11,600	Honduras
W. H. Wood					
CADARETTA	1918	Cargo	2,648	3,500	Sweden
NORTH BEND	1917	Cargo	1,291	2,000	Philippine
QUINAULT	1921	Cargo	1,138	2,000	Honduras

Report on U. S. Shipping

(Continued from Page 71)

were controlled by two successive international organizations of maritime governments. These organizations exercised the power of vessel allocation through the requisitioned tonnage of the participating nations. That there was an urgent need for organizations of such sweeping authority during the war there can be little doubt.

Shipowners throughout the world took the position at the war's end that there was no further need for an international governmental control of shipping and events have vindicated their judgment. The transitional United Maritime Consultative Council operated from March 2, 1946 to October 31, 1946 for the primary purpose of insuring the implementation of the UNRRA and certain national government import programs. But, since the world shipping deficit had already disappeared, the primary operating function of UMCC turned out to be unnecessary.

As UMCC approached its end, representatives of the member governments met in Washington to draft a convention for a Provisional Maritime Consultative Organization. This organization was intended to function in an interim capacity pending the organization of a permanent body. Meeting in Geneva in February 1948, representatives of twenty-one nations approved the charter of the permanent body to be called the Intergovernmental Maritime Consultative Organization with headquarters in London. As a matter of interest, the government of Panama withdrew from the Geneva Conference primarily because it was not given a seat on the Council of the organization. The government of the USSR, as in the case of preceding maritime conferences, was the most conspicuous absentee.

Shipowners have viewed this succession of international governmental bodies with some misgivings. In opposition to a negative position, it has been argued that the United Nations would in any event participate in maritime problems. It would therefore be preferable, so the argument goes, to set up a world organization for shipping to come under the wing of the United Nations Organization as a "specialized agency". Another argument in favor of the Intergovernmental Maritime Consultative Organization has been its purely advisory—rather than plenary—character and its avowed disinterest in commercial matters. Shipowners, however, have not failed to note that nations represented at the various preparatory conferences have freely introduced commercial matters that have traditionally come within the province of industry rather than governments.

As the new charter is drawn, the organization gives promise of developing into a useful body at the government level. With the important exception of the Maritime Safety Committee, to which regulatory functions may be delegated by the member nations, it is without executive powers. It does not, moreover, lay any claim to jurisdiction in commercial matters. It may also play an important role in stemming the tide flowing towards worldwide governmental restrictions on maritime activities. If the principles of the charter are adhered to, the shipping industry should have little cause to complain.

Above all, the shipowners must insist that the new government body should not encroach on the international shipping industry organizations. The most important of these organizations are the international liner conferences which regulate competitive practices on the foreign trade routes where national regulatory bodies are ineffective. The conferences perform functions comparable in many respects to the internal regulation of the railroads by national bodies.

In recognition of the essentiality of the liner conferences, the Congress, in the Shipping Act of 1916, exempted American shipping lines from the provisions of our anti-trust legislation in their participation in conference activities. As a safeguard to the national interest, however, the conferences in U.S. trade areas must conform with certain standards laid down by statute and by the Maritime Commission.

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INTERNATIONAL COMPARATIVE ANALYSIS

MARITIME WAGES AND WORKING CONDITIONS—UNLICENSED PERSONNEL

Cargo Vessels of 10,000 Deadweight Tons

NATION	BASIC MONTHLY WAGE			BASIC HOURS (Deck & Engine Room)	OVERTIME RATE PER HOUR	ESTIMATED MONTHLY PAYMENTS INCLUDING OVERTIME & PENALTIES			SUBSISTENCE	SOCIAL CONTRIBUTIONS	PENALTIES	PAID VACATION	AREA BONUSES & MISCELLANEOUS
	A.B.	O.S.	Chief Cook			A.B.	O.S.	Chief Cook					
United States (Data applies to West Coast unlicensed unions. Position of East Coast union varies in detail)	$210.00	$170.00	$237.00	**1. In Port:** 40 hours per week between 8 AM & 5 PM, Monday through Friday. **2. At Sea:** All whose basic work week is 56 hrs. (watches) paid overtime above 48 hrs. Overtime paid for all work on 9 holidays per year at sea as well as in port.	Overtime rate for deck personnel $1.41 per hour for Boatswains Mate and above. All others $1.12 per hour.	$300.00	$275.00	$345.00	If food not provided in port, subsistence allowance $3.00 per day. Estimated subsistence on ship costs $1.80 per day per capita.	Merchant seamen covered by State Unemployment and Federal Old-Age & Survivors' Insurance. Health facilities provided by Marine Hospital.	Full range of cargo, stevedoring & work penalties in addition to basic pay.	14 consecutive days after one year of service.	War risk bonus of $2.50 per day in certain areas. Attack bonus of $125.00 per individual in event of serious damage from residual war hazards (mines).
Canada	$170.00	$150.00	$200.00	**1. In Port:** A total of 40 hours per week, 8 hours per day between 8 AM & 5 PM Monday through Friday. **2. At Sea:** 56 hours per week.	90c per hour First Cook. 80c for A.B. 70c for O.S.	$190.00	$170.00	$220.00	If food not provided by ship, allowance is $3.25 as in contract. Estimated subsistence on ship at sea costs $1.30 per day.	Seamen come within Canadian National Unemployment Insurance. No pension scheme. Hospitalization through Sick Mariners Fund.	Full range of cargo & stevedoring penalties. Some work penalties.	14 days after 12 months of service.	No war risk bonuses.
United Kingdom	$ 96.00	$ 80.00	$110.00	**1. In Port:** A total of 45 hours per week, 8 hours per day between 6 AM & 6 PM Monday through Friday and 5 hours on Saturday morning. **2. At Sea:** 56 hours per week.	50c per hour for First Cook and A.B. 25c for O.S.	$108.00	$ 92.00	$122.00	If food not provided in port, allowance is 80c per day. Estimated subsistence on ship at sea is $1.20 per day.	British seamen covered by national health & pension scheme. Under new established service scheme, A.B.'s receive approximately $4.00 per week unemployment compensation in addition to government benefits.	Very few penalty payments. Seamen not even paid extra for carrying explosives.	14 days per annum plus subsistence. Additional leave for Sunday work at sea.	No war risk bonuses. A 5% premium for prolonged service abroad after 1st year. 10% after 2 years.
	These rates are for seamen who have served in merchant navy at any time in past eight years. Basic wages for newcomers are lower.					Less for newcomers							
Norway	$101.00	$ 84.00	$115.00	**1. In Port:** Total of 48 hours per week. **2. At Sea:** 56 hours per week.	40c per hour on week days and 80c per hour on Sundays.	$113.00	$ 96.00	$127.00	$1.20 per day when food not found by ship.	Broad range of social benefits—health, unemployment and retirement.	Moderate penalty payments. 5% on tankers.	Up to 21 days per annum with subsistence.	No area risk bonuses. Bonus of $100.00 per man if vessel loss due to war causes. Monthly bonus of $18.00 per A.B. for continuous trading in American waters. Small tropical bonus for engine room personnel.
	Includes "risk pay" of 136 kroner.												
Sweden	$ 86.00	$ 54.00	$ 92.00	**1. In Port:** Total of 46 hours per week. **2. At Sea:** 56 hours per week.	Rate ranges from minimum of $0.28 per hour on work days upwards.	$114.00	$ 70.00	$120.00	Estimated food allowance of $1.30 per day at sea.	Broad range of social benefits—health, unemployment & retirement.	Moderate penalty payments. 5% on tankers.	Annual leave varies but averages one day per month of service plus subsistence.	$139.00 paid those on war casualty vessels but no area risk bonuses. $10.00 per month bonus for qualified seamen on permanent overseas service plus $17.00 when port of termination is U.S.A.
	In addition a cost of living increment of 25.7% is paid all seamen.												
Denmark	$ 88.87	$ 68.00	$107.00	**1. In Port:** Total of 48 hours per week, 8 hours per day between 6 AM & 6 PM. Sunday overtime. **2. At Sea:** 56 hours per week.	Average of 25c week days and 35c Sunday.	$ 98.00	$ 78.00	$117.00	Reported cost at sea $1.30 per rating.	Broad range of social benefits—health, unemployment & retirement.	Limited to very few items such as bilge cleaning and undermanning. $6.20 tanker bonus.	12 days annually.	Area risk bonus 20%—140% of basic. Small away-from-home bonus.
Netherlands	$ 74.00	$ 38.00	$ 98.00	**1. In Port:** A total of 45 hours per week. 8 hours per day between 6 AM & 6 PM Monday through Friday. Five hours Saturday morning. **2. At Sea:** 56 hours per week.	Maximum overtime rate $0.57	$ 85.00	$ 48.00	$110.00	Not in contract but about $0.80 per day when found by ship. Allowance of $0.67 per day when not found by ship.	Full coverage government retirement, health and unemployment scheme. Includes generous state allowance for dependents. Continuous unemployment compensation at 100% basic extends for 1st 3 weeks & at 80% of basic thereafter until 6 months after loss of employment.	Practically no penalty payments except $1.90 per month for unlicensed personnel on tankers.	12 working days paid annual leave after 1 year of continuous service.	No war risk bonuses. 10% wage premium for all work outside Netherlands after twelve consecutive months away from home.

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INTERNATIONAL COMPARATIVE ANALYSIS - Continued

MARITIME WAGES AND WORKING CONDITIONS—UNLICENSED PERSONNEL

Cargo Vessels of 10,000 Deadweight Tons

NATION	BASIC MONTHLY WAGE			BASIC HOURS (Deck & Engine Room)	OVERTIME RATE PER HOUR	ESTIMATED MONTHLY PAYMENTS INCLUDING OVERTIME & PENALTIES			SUBSISTENCE	SOCIAL CONTRIBUTIONS	PENALTIES	PAID VACATION	AREA BONUSES & MISCELLANEOUS
	A.B.	O.S.	Chief Cook			A.B.	O.S.	Chief Cook					
France (All wage data on pre-devaluation basis. Subsequent wage increases do not appear to have kept pace with devaluation)	$ 90.00	$ 77.00	$105.00	1. In Port: 48 hours per week. 2. At Sea: 48 hours per week.	Average of $0.52 per hour.	$105.00	$ 82.00	$120.00	Food provided by ship estimated to cost about $1.00 per day.	Special seamen's pension & hospitalization fund managed by Inscription Maritime. Seamen participate in state unemployment scheme. Dependents allowance.	Relatively few penalty payments.	2 days' leave for each month of service. Subsistence also provided.	Special trading allowance in "distant" trades.
	(Includes cost-of-living bonus)												
Greece (On vessels trading outside Mediterranean)	$112.00	.....	$144.00	1. In Port: A total of 45 hours per week. 8 hours per day between 6 AM & 7 PM, Monday through Friday. Five hours Saturday morning. 2. At Sea: 56 hours per week	$0.35 per hour.	$117.00	.....	$150.00	Allowance varies with pay but averages less than $1.00 per day.	Complete social coverage, including family allowance. Special occupational pension system.	Cargo bonus of about 10% for petroleum & explosives Practically no working penalties.	No paid annual leave. In lieu of vacation each seaman receives a six months' bonus of $80.00.	No area risk bonus or other special payments.
Yugoslavia	$ 84.00	$ 70.00	$ 89.00		Cook—50c A.B.—48c O.S.—39c	$ 87.00	$ 73.00	$ 92.00	Food subsistence cost at sea estimated at 70c per day	Workers contribute 7½% of wages for broad coverage. Employers make similar contribution. Includes family allowances based on number of children.	No penalty payments of any importance. ance.	Paid vacation of varying periods with no subsistence allowance.	50% of all income must be contributed as compulsory savings. No area risk bonuses or other special payments.
New Zealand	$ 83.00	$ 61.00	.....	1. In Port: A total of 45 hours per week. 8 hours per day between 7 AM & 5 PM Monday through Friday. Five hours Saturday morning. 2. At Sea: 56 hours per week.	$0.70 per hour.	$113.00	$ 90.00	.....	Food allowance of $0.97 per day when food not found by ship.	Broad range of social and health benefits.	Numerous penalty payments by foreign standards.	14 days on full pay after one year of continuous service.	
	(Additional seagoing allowance of $19.00 per rating)												

MARITIME LABOR AGREEMENTS

The accompanying tabular analysis of comparative maritime wage contracts in the U. S. was prepared as of May 15, 1948. By the time our Year Book is released, certain sweeping changes in some of the contracts, particularly with regard to the union hiring and closed shop provisions of the CIO contracts, may be necessary to assure compliance with the Taft-Hartley Act.

Effects of the Taft-Hartley Act on maritime labor contracts are still obscure, since few new contracts have been agreed subsequent to the effective date of the Act. The reader will note, however, that in the few new contracts the discriminatory hiring features have at least been modified. The pursers, for example, had gone far in attaining closed shop status with some companies prior to the effective date of the Act. The new purser contracts, in contrast, merely state that the company agrees to "prefer" members of the union. Similarly, in the new SUP contract on the West Coast, the employers agree to give hiring preference to old employees.

Another contractual matter which may raise complications is the question of supervisory employees. Exactly who will be found to be supervisory employees as defined in the Taft-Hartley Act remains to be seen, but early NLRB action indicates that many of the top employee brackets in the maritime industry may be classified as supervisory and therefore without collective bargaining privileges under the Act. In reaching the basic East Coast agreement, the Masters, Mates and Pilots undertook to defend employers against any charges of violating the supervisory employee provisions of the Taft-Hartley Act and to indemnify employers for any liability incurred through collective bargaining with the union.

In a short time we will have a clear view of the general scheme of Taft-Hartley modifications in the maritime contracts. Whether these modifications will be found as complying with the provisions of the Act is another matter. Certainly the written framework of industrial relations will differ substantially from that complex of labor relations codes developed in the postwar period. Management and labor must learn to adjust their industrial relation procedures to the new rules.

Tables on the following pages.

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UNITED STATES MARITIME LABOR AGREEMENTS

A. Dry Cargo Agreements

EMPLOYER GROUP	UNION	SIGNATORIES & DATE	NATURE & SCOPE	EXPIRATION	DEGREE OF RECOGNITION	ARBITRATION & GRIEVANCE PROCEDURE	WAGES	OVERTIME	VACATION	MISCELLANEOUS
Committee for General Agents Atlantic-Gulf, & 38 Companies.	National Maritime Union of America.	Joseph Curran & Frank J. Taylor June 14, 1946.	Basic contract of June 15, 1944 amended substantially by War Shipping Administration proposals accepted on June 14, 1946. There have been numerous subsequent amendments with wage changes at approximately six month intervals.	June 15, 1948.	NMU recognized as sole collective bargaining agent on vessels covered by agreement. Preferential hiring of NMU members subject to qualified rejection by employer. Certain key ratings exempt from preference. No maintenance of membership by literal interpretation.	Standard clause barring strikes & lockouts. All disputes not settled through negotiations to be submitted to Port Committee of three union and three employer representatives. These six choose a seventh member, or in a deadlock, he is appointed by Conciliation Service. Decision binding on both parties. In practice, grievances handled by negotiating committee.	$204.09 per month per AB & $177.47 per OS.	**In Port:** Normal day of eight hours between 8 AM and 5 PM Monday through Friday. Everything else overtime. **At Sea:** All whose basic work week is fifty-six hours shall be paid overtime above forty-eight hours. Non-watchers receive compensatory adjustment in lieu of overtime. Overtime received for work performed on holidays. Overtime rate $1.125 per hour for those with basic pay less than $223.23 per month & $1.41 for all others.	Seven days after one year & fourteen days per annum for each subsequent year.	Only cargo penalty payments are: 10% of basic for carrying explosives & $5.00 per voyage for sulphur. Extra payment for cleaning tanks or holds in which penalty cargoes were stowed. Customary penalty payments for certain types of work.
Atlantic-Gulf Ship Operators Assn. for A. H. Bull, Baltimore, Insular, Alcoa, Seatrain, Smith and Johnson, South Atlantic, Eastern and P. & I. Six other companies have arranged similar contracts.	Seafarers' International Union of North America.	Union Officers and representatives of various companies July 31, 1947 with subsequent wage amendment on March 10, 1948.	Covers unlicensed personnel in Deck, Engine, & Stewards' Departments on freight vessels. Cadets & Pursers excluded.	July 31, 1948.	Only members of SIU employed on unlicensed jobs on companies' freight vessels. Union provides employees subject to modified rejection right of company. Maintenance of membership not mentioned explicitly.	Standard clause barring strikes and lockouts. Grievances to Port Committee of three union and three company representatives. If no agreement, binding decision to be made by referee appointed by Conciliation Service.	$210.01 per month per AB and $177.47 per OS.	Hours and overtime rates same as NMU.	One week after first year, two weeks after second.	Much broader list of penalty cargoes as compared with NMU. Customary penalty payments for certain types of work.
Alcoa Steamship Co. (Standard pursers contract in process of negotiation with Moore-McCormack. Most of large shipping companies have contracts with or are negotiating with AMMSO).	American Merchant Marine Staff Officers' Assn., Inc.	R. P. Schilling & Thomas B. Hill January 19, 1948.	Covers all Chief Pursers, Pursers, Pursers-Pharmacist Mates & Assistant Pursers, Purser's Clerks, & other members of the Staff Pursers' Department.	December 31, 1948 and year to year thereafter on 60 days notice.	AMMSO recognized as exclusive bargaining agent. As a hiring policy company agrees to "prefer" members of the union in good standing when available.	Grievances to Board of three, one union, one employer, & third selected by two. In event of deadlock Am. Arbitration Assn. to name third member. Decisions binding upon both parties.	Junior Asst. Purser/Pharmacist Mate $309.17 & Junior Asst. Purser $282.39 per month.	**In Port:** Normal day of eight hours between 8 AM & 5 PM Monday through Friday. Everything else overtime. **At Sea:** Eight hours per day between 8 AM and 5 PM. Overtime for Sundays & holidays. Overtime rate $1.70 per hour.	Fourteen consecutive days per annum after at least one full year of continuous service.	Customary cargo penalties.
Committee for Companies & Agents, Atlantic-Gulf.	National Marine Engineers' Beneficial Assn.	E. P. Trainer & Frank J. Taylor June 16, 1947. Subsequent wage amendment March 11, 1948.	Covers all licensed engineers.	June 15, 1948 & June 15 of any subsequent year on two months' written notice.	MEBA recognized as sole representative of all licensed engineers. Preferential union hiring by employer if qualified & maintenance of membership "in good standing."	Standard clause barring strikes & lockouts. Grievances to Board of two union and two employer representatives. In event of deadlock, fifth member appointed by majority of Board; this failing, fifth member taken from list provided by Secretary of Labor. Decisions binding upon both parties.	Class C Liberty-Type $601.60 per month for Chief & $402.93 for First Asst. Engineer. Additional $37.40 per month for non-watchers.	**In Port:** Normal working time eight hours per day between 8 AM & 5 PM Monday through Friday. All else overtime. **At Sea:** Two watches of four hours each day. All whose basic work week is fifty-six hours shall be paid overtime above forty-eight hours. Overtime rates $1.70 per hour. Overtime for work performed on holidays.	Fourteen days per annum after one year of service.	Penalty cargoes $10 per voyage with sulphur & 10% of basic wage for explosives.
Committee for Companies & Agents, Atlantic-Gulf Coasts.	National Organization Masters, Mates & Pilots of America.	Albert E. Oliver & Frank J. Taylor Oct. 1, 1947.	Covers all licensed Deck Officers, including Masters if provided in previous agreements. Union prepared letter agreeing to defend employers against any charge of violating the supervisory employee provisions of Taft-Hartley Act.	Sept. 30, 1948 & Sept. 30 of any subsequent year on two months' written notice.	Union sole representative. Preferential hiring of union members if qualified in opinion of Company. Company has right to select own employees. Explicit maintenance of membership "in good standing" as defined. Master excepted. Company may discharge unsatisfactory deck officers.	Standard clause barring strikes & lockouts. Grievances submitted to Board of two union & two company representatives. In event of deadlock, fifth member appointed by majority of Board this failing, fifth member selected from list of Secretary of Labor. Decisions binding on both parties.	$648.48 for Master & $402.93 per month for First Officer. Additional $37.40 per month for non-watchers. Class C type vessel.	**In Port:** Normal day of eight hours between 8 AM & 5 PM Monday through Friday. Everything else overtime. **At Sea:** Two watches of four hours each per day. All whose basic work week is fifty-six hours shall be paid overtime above forty-eight hours. Overtime rate $1.60 hr. Overtime for work performed on holidays.	Fourteen days per annum after one year of service.	Penalty cargoes $10 per voyage with sulphur & 10% of basic wage for explosives.

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U. S. MARITIME LABOR AGREEMENTS Continued

EMPLOYER GROUP	UNION	SIGNATORIES & DATE	NATURE & SCOPE	EXPIRATION	DEGREE OF RECOGNITION	ARBITRATION & GRIEVANCE PROCEDURE	WAGES	OVERTIME	VACATION	MISCELLANEOUS
Committee for General Agents Atlantic-Gulf, 32 Companies.	American Communications Assn. (ACA in process of organizational changes.)	Joseph P. Selly & Frank J. Taylor June 14, 1946.	June 14 agreement amended basic contract of June 11, 1945 which covered all licensed radio officers on WSA vessels. On June 19, 1947 contract extended through memorandum of agreement.	June 15, 1948.	Union recognized as sole collective bargaining agent. Closed shop basis.	Standard clause barring strikes & lockouts. Grievances to Port Committee of two employer and two union representatives. In event of deadlock, arbitrator selected from Conciliation Service list. Decision of Arbitrator final & binding upon both parties.	$300.51 per month for operator on freighters.	**In Port:** Almost all time free. **At Sea:** All radio officers whose basic work week is fifty-six hours shall be paid overtime above forty-eight hours. Overtime rate of $1.69 per hour.	Two weeks per annum after one year of continuous service.	Customary cargo penalties similar to licensed officers.
Twenty-four Companies have standard contracts with CTU. These contracts are not all uniform. Contract outlined herein is standard for members of Atlantic-Gulf Ship Operators Assn.	Radio Officers Union of The Commercial Telegraphers Union.	Contracts recently signed at varying dates.	Practically a closed shop for radio officers.	Standard contracts expire approximately Aug. 15, 1948.	Preferential hiring of union members in good standing. Company must also ascertain "good standing," when union member transferred or promoted.	Standard clause barring strikes & lockouts. Final appeal to board of arbitration composed of one union & one employer representative. Third member selected by these two or appointed by Conciliation Service.	$300.51 per month for operator on freighters.	Same hours as ACA but overtime rate is $1.70 per hour.	Two weeks per annum after one year of service.	Customary explosives & sulphur bonus. Detailed itemization of penalty overtime payments.
Pacific American Shipowners Assn. on behalf of 34 companies.	Sailors Union of the Pacific.	Harry Lundeberg & J. B. Bryan Oct. 11, 1947 Amended April 7, 1948.	Agreements cover unlicensed deck personnel.	Sept. 30, 1949 & Sept. 30 of any subsequent year on two months' written notice. Parity wage review clause.	Employers agree to give hiring preference to old employees. When old OS's not available preference of hiring to graduates of Andrew Furuseth school of training.	Standard clause barring strikes & lockouts. Grievances to Port Committee of three union and three company representatives. In event of deadlock referee picked by Board of four persons, two of whom named by union and two by employer; this failing, a Federal Judge will be added.	$210.00 per month for AB and $170.00 per OS.	SUP and NMU have similar hours of work. Overtime rate for Boatswain's Mate and above $1.41 per hour. All others $1.12 per hour.	Fourteen days per annum after one year of service.	Penalty cargoes: $10 per voyage with sulphur & 10% of basic wage for explosives. Customary penalty payments for certain types of work.
Pacific American Shipowners Assn. for 34 companies.	National Union of Marine Cooks & Stewards.	E. F. Burke & J. B. Bryan Nov. 26, 1946 Amended subsequently.	Covers all employees in stewards' department.	June 15, 1948.	Union recognized as sole bargaining agent. Preferential employment & hiring through the union except Chief Stewards on A & B passenger ships. All hiring to be done through union hiring hall. Employer has qualified right of rejection.	Standard clause barring strikes & lockouts. A Port Committee of three union & three employer representatives handles grievances. In event of deadlock, referee to be appointed by Port Committee; this failing, referee to be appointed by Conciliation Service. Decision of referee final & binding on both parties.	Chief Cook $237.30 per month. Alaska trade slightly higher.	**In Port:** Normal day of eight hours between 8 AM & 5 PM Monday through Friday (home), & eight hours in spread of twelve hours (away) for service of crew. **At Sea:** All whose basic work week is fifty-six hours shall be paid overtime above forty-eight hours. Overtime for work performed on holidays. Chief Cook rate $1.38 per hour.	Fourteen days per annum after one year of service.	Penalty cargo provisions for explosives & sulphur. Customary penalty payments for certain types of work.
Pacific American Shipowners Assn. on behalf of 34 companies.	Pacific Coast Marine Firemen, Oilers, Watertenders & Wipers Assn.	V. J. Malone & J. B. Bryan July 16, 1946 Subsequently amended.	Agreement of July 16 amended basic agreement of Oct. 10, 1941 which covered unlicensed engine room personnel.	June 15, 1948.	Union recognized as employee representative. Preferential hiring through union. Employer has qualified right of rejection.	Grievances to Port Committee of three union & three employer representatives. In event of deadlock a binding decision made by referee who is appointed by the Port Committee; this failing, referee to be appointed by Conciliation Service. Standard clause barring strikes & lockouts.	Oilers $205.46 per month and Wipers $202.57.	MFOWW and NMU have similar hours of work. Overtime rate $1.10 per hour for oilers & wipers.	Fourteen days per annum after one year of service.	Penalty cargo extras. Explosives 10%. Sulphur $10.00. Wide range of penalty payments on certain types of work.
Committee for the Pacific American Shipowners Assn. on behalf of 35 companies.	American Communications Assn. Marine Division.	J. B. Bryan & Philip A. O'Rourke June 14, 1946.	Basic agreement of Nov. 18, 1941 was amended in Washington on June 14, 1946 and there have been numerous subsequent amendments, the latest being February 26, 1948. Covers all radio officers. Agreement covers all ships operated by company unless particular service specified.	June 15, 1948.	Union recognized as representative of all radio operators. Preferential hiring with union acting as a central clearing bureau. Employer has qualified right to reject union men.	Standard clause barring strikes & lockouts. Grievances to Board of two union & two employer representatives. In event of deadlock, a fifth member selected from Conciliation Service list. Decisions binding upon both parties.	$294.01 per month for operator on freighter.	ACA East Coast and West Coast have similar hours of work. Overtime rate is $1.65 per hour.	Fourteen days per annum after one year of service.	Similar to East Coast. Explosives 10%. Sulphur $10. Special rates for cargo handling.
Pacific American Shipowners Assn. on behalf of 34 companies.	National Marine Engineers Beneficial Assn., C.I.O.	R. Meriwether & J. B. Bryan Nov. 17, 1946 Subsequently amended.	Covers licensed engine room personnel.	June 15, 1948.	Union recognized as representative for licensed engine room officers. Preferential hiring in Alaska trade.	Standard clause barring strikes & lockouts. Grievances to Board of two union & two employer representatives. In event of deadlock a fifth member appointed by Board; this failing, fifth member is selected from list of Secretary of Labor. Decisions are final & binding upon both parties.	$605.57 per month for Chief and $405.58 for First Asst. Engineer. Additional $35.00 per month for non-watchers.	MEBA West Coast and East Coast have substantially similar hours of work.	Two weeks per annum after one year of employment.	West Coast and East Coast similar.

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U. S. MARITIME LABOR AGREEMENTS Continued

EMPLOYER GROUP	UNION	SIGNATORIES & DATE	NATURE & SCOPE	EXPIRATION	DEGREE OF RECOGNITION	ARBITRATION & GRIEVANCE PROCEDURE	WAGES	OVERTIME	VACATION	MISCELLANEOUS
Pacific American Shipowners Assn. on behalf of 32 companies.	National Organization of Masters, Mates & Pilots of America, Local No. 90.	J. B. Bryan & Capt. C. F. May October 2, 1947 Long-term extension of April 16, 1948 not included.	Covers all licensed deck officers.	Sept. 30, 1948 & Sept. 30 of any subsequent year on two months' written notice. Wage review semi-annually.	Union recognized as representative of licensed deck officers. Company agrees to give consideration to union members when filling vacancies, except masters. Preferential employment in Alaska trade. No maintenance of membership	Standard pledge barring strikes & lockouts. Grievances submitted to Board of two union & two company representatives. In event of deadlock fifth member appointed by majority of Board; this failing, fifth member selected from list of Secretary of Labor. Decision of Board binding upon both parties.	$652.75 per month for Masters and $405.58 for First Officers on Class C type vessels, Additional pay for non-watchers.	West Coast and East Coast have substantially similar provisions.	Fourteen days per annum after one year of continuous service.	West Coast and East Coast similar.
B. CARGO HANDLING AGREEMENTS										
New York Shipping Association.	International Longshoremen's Assn.	Joseph P. Ryan & J. V. Lyon Aug. 21, 1947.	Main cargo agreement covers all employees loading & discharging cargoes. Supplementary agreements cover other shoreside categories. Similar contracts signed with other East Coast & Gulf port associations.	Aug. 21, 1948.	Union provides employees to be hired on virtually closed shop basis.	Arbitration committee of two union & two employer representatives. Fifth member elected by these four in event of deadlock. Decisions of committee binding.	Straight time rate of $1.75 per hour for general cargo. Premium in other cargoes ranges as high as 94% on explosives & damaged cargoes.	Working day at straight time is eight hours, 8 AM to 12 noon & 1 PM to 5 PM. All work from 5 PM Friday to 8 AM Monday is overtime. Also work during meal hour.	One week per annum with pay.	Minimum of twenty men to a gang, including minimum of eight holdmen. Hatch foreman & tractor operators additional. Size & weight of sling load & number of men in gang determined so as to attain orderly safe & efficient flow of cargo, protecting safety of worker & eliminating wasteful labor.
Waterfront Employers of the Pacific Coast on behalf of certain Employer Organizations.	International Longshoremen's & Warehousemen's Union.	Harry Bridges & F. P. Foisie June 6, 1947. Subsequently amended.	Covers all longshoremen & related labor categories on Pacific Coast. A few Northwest ports under ILA agreement.	June 15, 1948.	Preferential employment of ILWU members. Hiring through jointly controlled hiring halls.	Coast Labor Committee of three labor & three employer representatives. Impartial chairman, appointed by Secretary of Labor, breaks tie vote.	Straight time rate of $1.67 per hour. Penalty premiums similar to ILA agreement.	First six hours each day between 8 AM & 5 PM on straight time. 5 PM Friday to 8 AM Monday on overtime. Also after five consecutive hours without meal. Overtime is time and one half of straight time. Higher overtime premiums in certain instances.	One week after one year of service. Two weeks for two or more years.	ILWU attempting to control stevedoring practices & equipment but employers still retain right of managerial decision. Contract disallows methods of discharging & loading that are inimical to health & safety of employees. Maximum sling loads also adopted.
C. TANKER AGREEMENTS										
Gulf Oil (Similar NMU agreements with certain other oil companies.)	National Maritime Union.	Willard F. Jones & Joseph Curran Basic contract dated 10/15/46. Subsequent wage amendments at approximately semi-annual intervals.	Covers all unlicensed personnel for whom NMU certified by NLRB.	June 15, 1948. Standard tanker contract provides for renegotiation of wages whenever changes made in dry cargo scale.	Union recognized as collective bargaining agent. Preferential employment of new people.	Standard clause barring strikes and lockouts. Unauthorized strikers subject to discharge. Board of Arbitration having three votes for each party, neutral member selected.	$212.96 per month for A.B. $183.39 per month for O.S.	**In Port:** Basic day eight hours between 8 AM & 5 PM Monday through Friday. **At Sea:** Basic week for watchers forty-eight hours. All else overtime. Overtime rate $1.125 per hour for those paid less than $223.23 per month. Rate of all others $1.41 per hour.	Four weeks vacation per annum after one unbroken year of service. Split of 6 months.	Working rules, particularly for engine & stewards departments, defined in extreme detail. Penalty payments for entering tanks & other customary items.
Standard New Jersey (Socony-Vacuum also has agreement with independent union. Not shown here.)	Esso Tankermen's Assn.	Gerardo Garcia Julius Jurgensen Samuel Royal John J. Collins & E. H. LeTourneau June 12, 1947 Amended June 24, 1947.	Covers deck, engine & stewards department on all American flag vessels of Esso.	June 30, 1948 & June 30 of any year on sixty days' notice. Due to rotating relief provisions which are new for unlicensed personnel special clause permitting cancellation prior to June 30, 1948 and return to old agreement of 3/26/46.	Union recognized as sole bargaining agent.	Standard clause barring strikes & lockouts. Unauthorized strikers subject to discharge. Typical Board of Arbitration. Neutral member chosen by Board or, in a deadlock, designated by the American Arbitration Assn.	Basic: $238.18 per month for A.B. $208.41 per month for O.S. Increments for successive years of service. Continuous service increment written into contract.	In lieu of overtime, port relief and vacations, unlicensed personnel entitled to paid leave equal to 1/3 the time served aboard vessel after three consecutive voyages.	See overtime.	If MWEB "discontinues to function" war bonus provisions will be made by mutual agreement.

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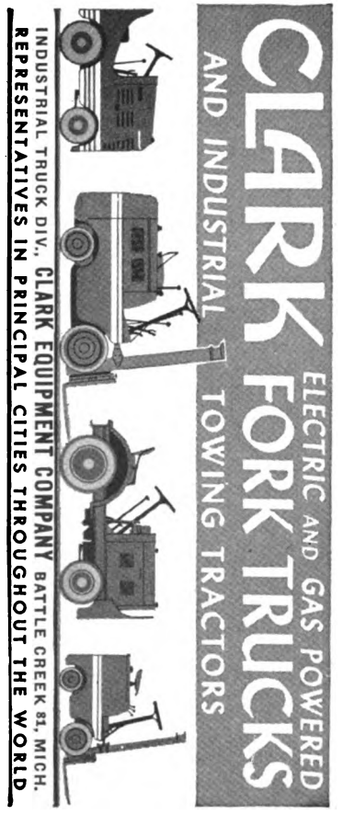
U. S. MARITIME LABOR AGREEMENTS Continued

EMPLOYER GROUP	UNION	SIGNATORIES & DATE	NATURE & SCOPE	EXPIRATION	DEGREE OF RECOGNITION	ARBITRATION & GRIEVANCE PROCEDURE	WAGES	OVERTIME	VACATION	MISCELLANEOUS
Standard New Jersey (Socony-Vacuum also has contract with independent union.)	Jersey Standard Tanker Officers' Assn.	Steve M. English D. P. Swain Albert Blue Robert S. Brod John J. Collins & E. H. LeTourneau Oct. 15, 1947.	Covers all officers, including masters & engineers.	Nov. 15, 1948 or Nov. 15 of any year on sixty days' written notice.	Exclusive bargaining agent.	Standard clause barring strikes & lockouts. Company & union member of Arbitration Board attempt to select neutral member. If deadlock, third member designated by American Arbitration Assn.	Starting wages Master paid $751 per month & Chief Engineer $712 per month. Nothing extra for non-watchers. Includes cost-of-living adjustment which is effective until June 30, 1948.	In lieu of overtime port relief & vacation each officer receives paid leave equal to one-third time on previous voyages at intervals of at least three voyages.	See overtime.	If MWEB "discontinues to function" war bonus by mutual agreement.
Standard New Jersey.	Esso Radio Officers' Assn.	Eugene G. Osborne Archibald Marcus John J. Collins & E. H. LeTourneau Oct. 15. 1947.	Covers all radio officers.	Nov. 15, 1948 or Nov. 15 of any year on sixty days' notice.	Exclusive bargaining agent only.	Standard clause barring strikes & lockouts. Unauthorized strikers subject to discharge. Company and union member of Arbitration Board attempt to select neutral member. In event of deadlock, neutral arbitrator designated by American Arbitration Assn.	Starting wage of $357. per month. Includes cost-of-living adjustment of $17 which is effective until June 30, 1948.	In lieu of overtime & vacation officers receive paid leave equal to one-third of time on previous voyages at intervals of at least three voyages.	See overtime.	Decision of MWEB apply to this agreement.



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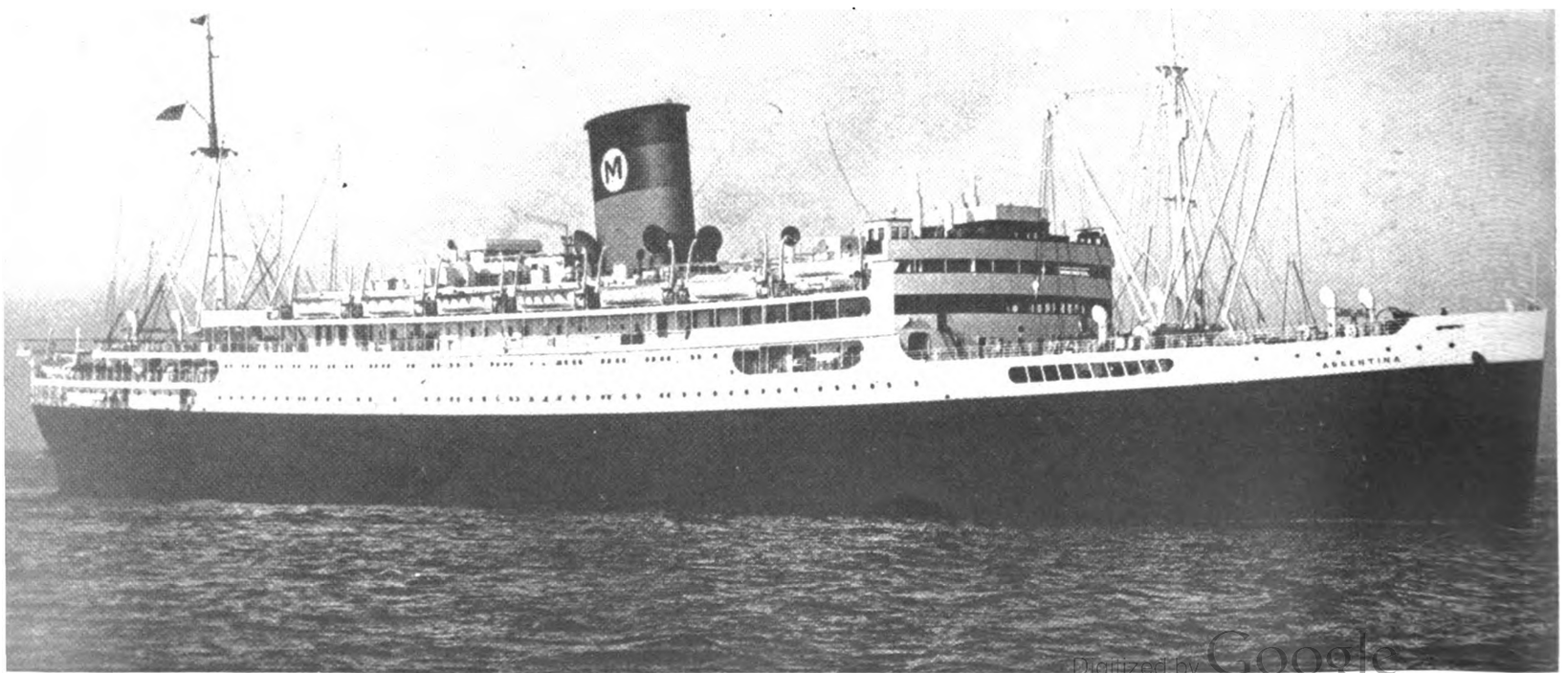
SS AMERICA—flagship of the American fleet and the fleet of the United States Lines, operators, plies between New York, Cobh, Havre and Southampton with a maximum capacity of 1,050 passengers. Minimum fares are $352 for first class, $210 for cabin class, and $160 for tourist class.

AMERICAN-FLAG PASSENGER FLEET

SS ARGENTINA—luxury cruise liner, with her two sister ships, the URUGUAY and the BRAZIL, operate between New York and the east coast ports of South America for Moore-McCormack Lines, Inc. These liners are equipped to accommodate 519 passengers each. In addition to these luxury class ships, Moore-McCormack operates cargo vessels carrying twelve passengers each in service to South America and to Norway, Sweden, Finland and Denmark.



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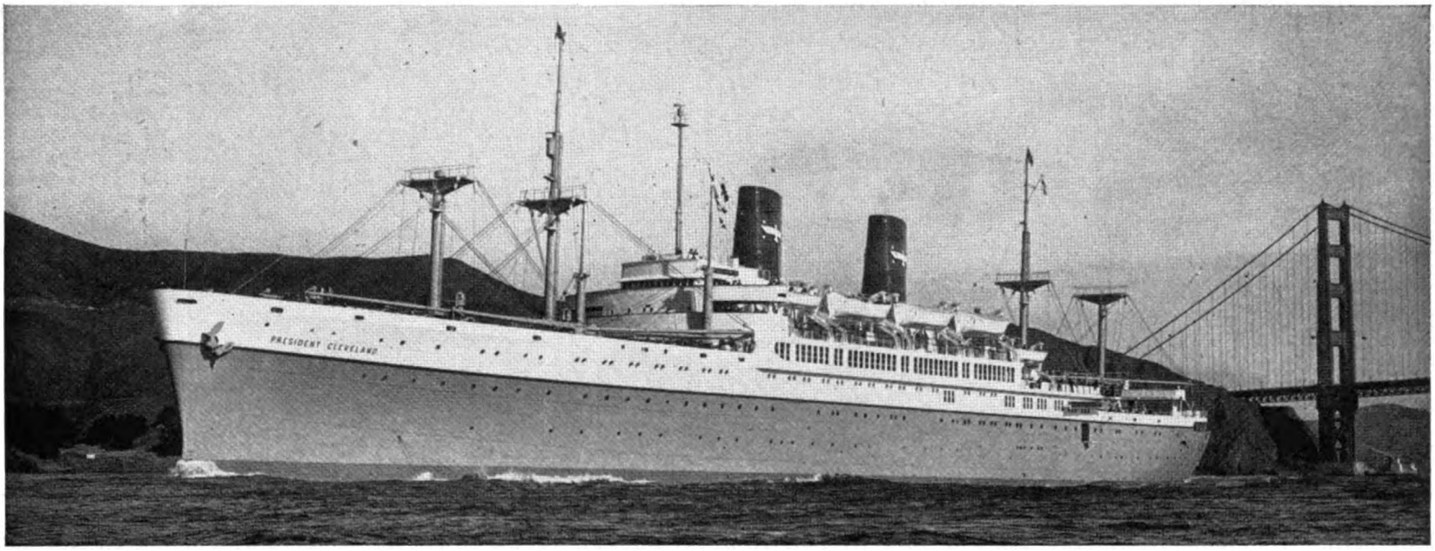
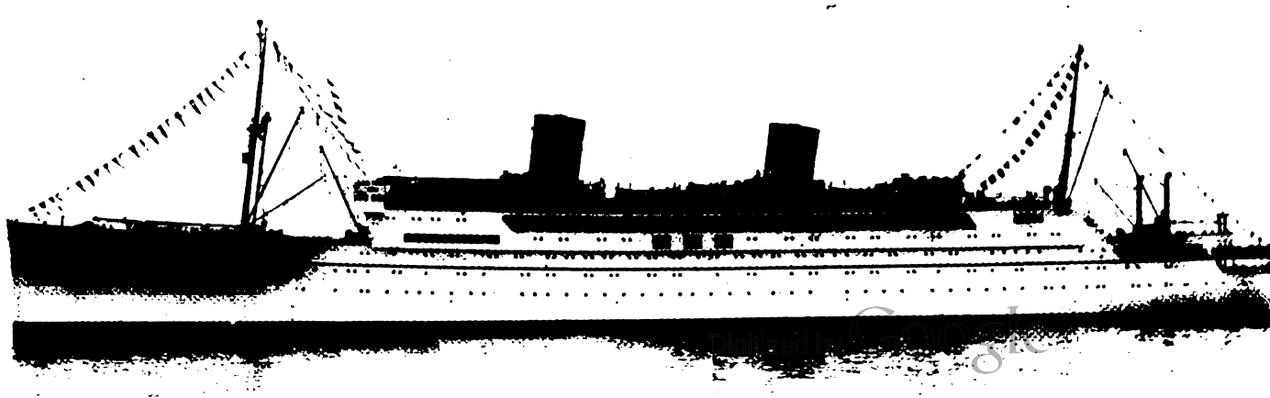
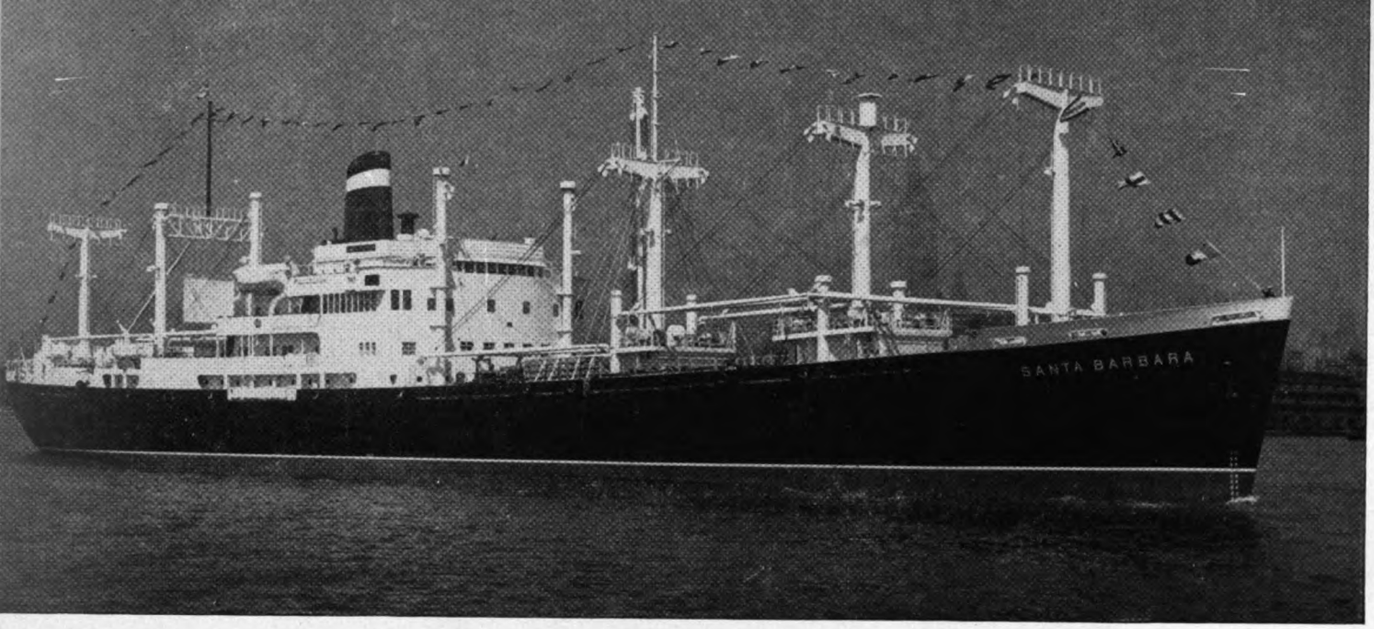
SS WASHINGTON—one-time flagship of the American fleet, is now being operated in the North Atlantic by the United States Lines as an "austerity" ship. This ship can accommodate 1,108 one-class passengers with fares to Cobh and Southampton starting at $175. In addition to the WASHINGTON and the AMERICA, U.S. Lines' cargo ships have limited passenger accommodations.



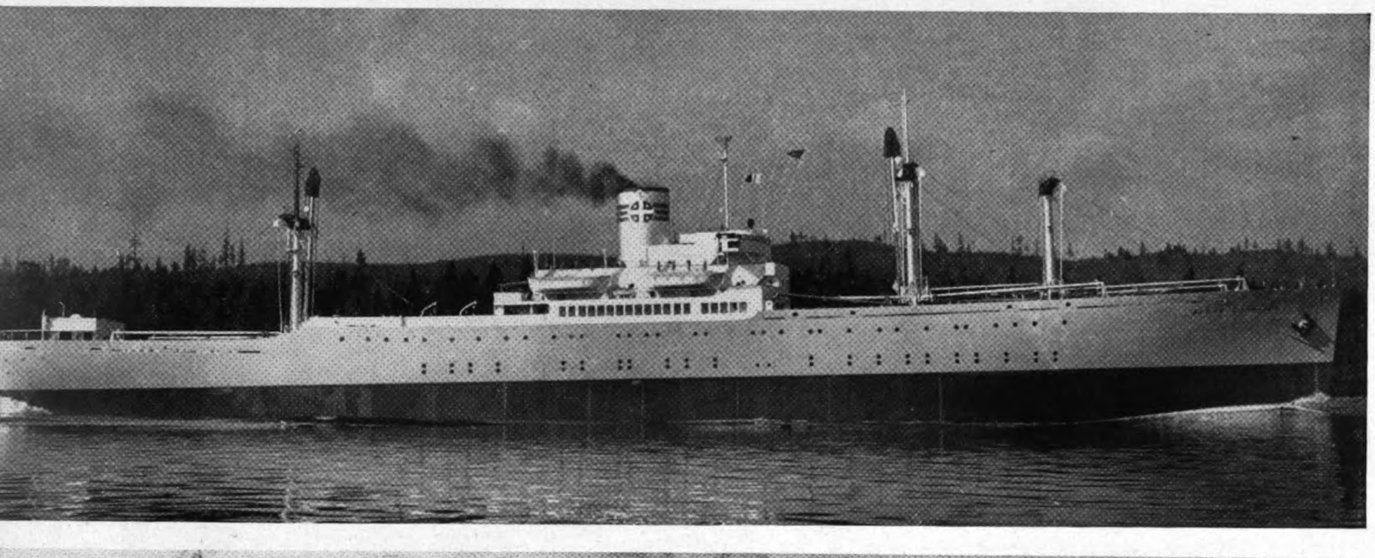
SS PRESIDENT CLEVELAND—operating in trans-Pacific service, along with her sister ship the PRESIDENT WILSON, are the newest ships in the U.S. passenger fleet. Each of these modern liners carries 550 passengers. In addition to these ships, the American President Lines operates a fleet of C-3's with accommodations for eight passengers each in trans-Pacific service, two ninety-eight-passenger ships and a fleet of C-4's with limited accommodations in the Round-the-World service.

SS LURLINE — Matson Navigation Company's luxurious Hawaiian Island liner recently placed in service, to be followed by the MARIPOSA and the MONTEREY, maintains a fast schedule between San Francisco, Los Angeles and Honolulu. These completely reconverted and modernized vessels accommodate 722 passengers each.

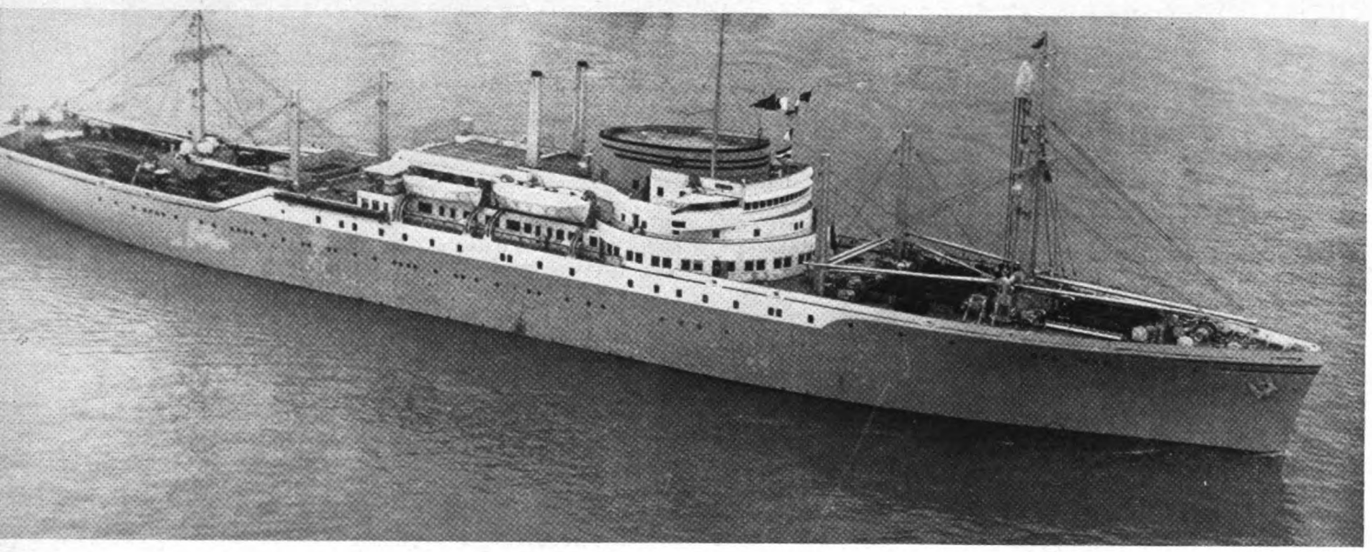




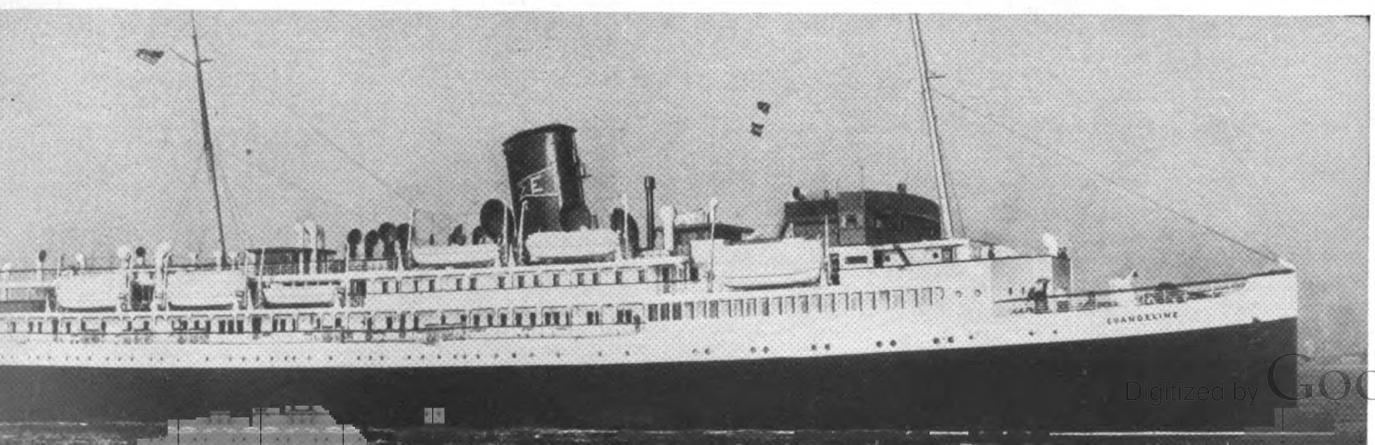
SS SANTA BARBARA — one of Grace Line's nine new 52-passenger ships providing weekly sailings from New York through the Panama Canal to the west coast countries of South America. In addition these ships provide casual cruises of three-weeks' duration from New York to the Caribbean on a weekly schedule.



SS ALCOA CAVALIER — one of Alcoa Steamship Company's three sister cruise liners serving the Caribbean area. The ALCOA CAVALIER operates on a 17-day schedule between New York and the Caribbean ports departing every three weeks. The ALCOA CORSAIR and the ALCOA CLIPPER depart from New Orleans on two 17-day sailings every three weeks bound for the same area. Cruise fares are from $450 up.



SS DEL MAR, and her two sister ships, the DEL NORTE and the DEL SUD, operated by the Delta Line of Mississippi Shipping Company, on 47-day cruise schedules from New Orleans to the East Coast of South America, have accommodations for 120 passengers each. These vessels are thoroughly modern post-war ships.



SS EVANGELINE of the Eastern Steamship Company carries 300 passengers on a 6-day cruise from Boston to Nassau, and 13-day cruises from Boston to Nassau, Miami and Havana. The SS YARMOUTH operates on the same routes and has the same capacity.

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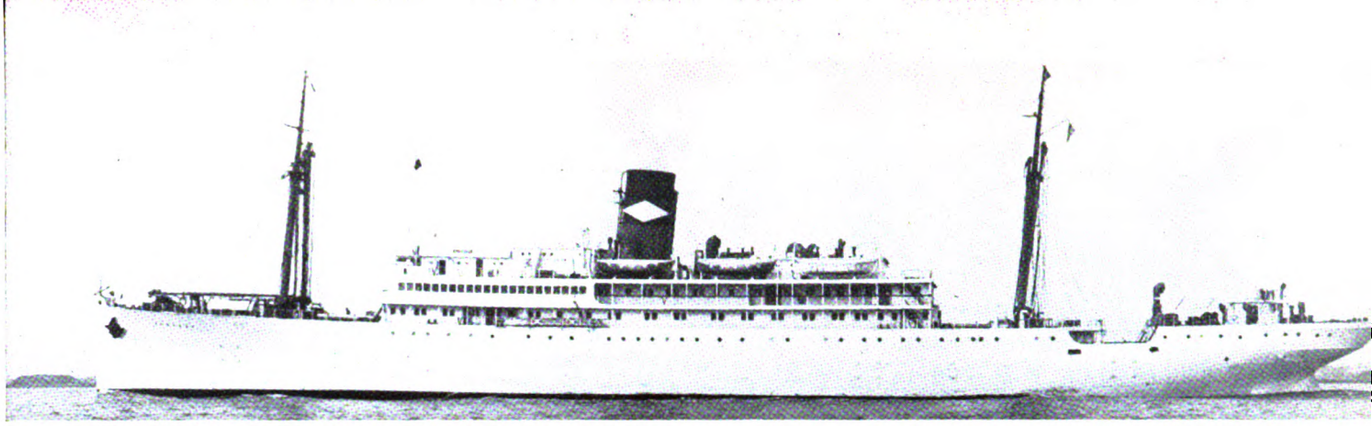
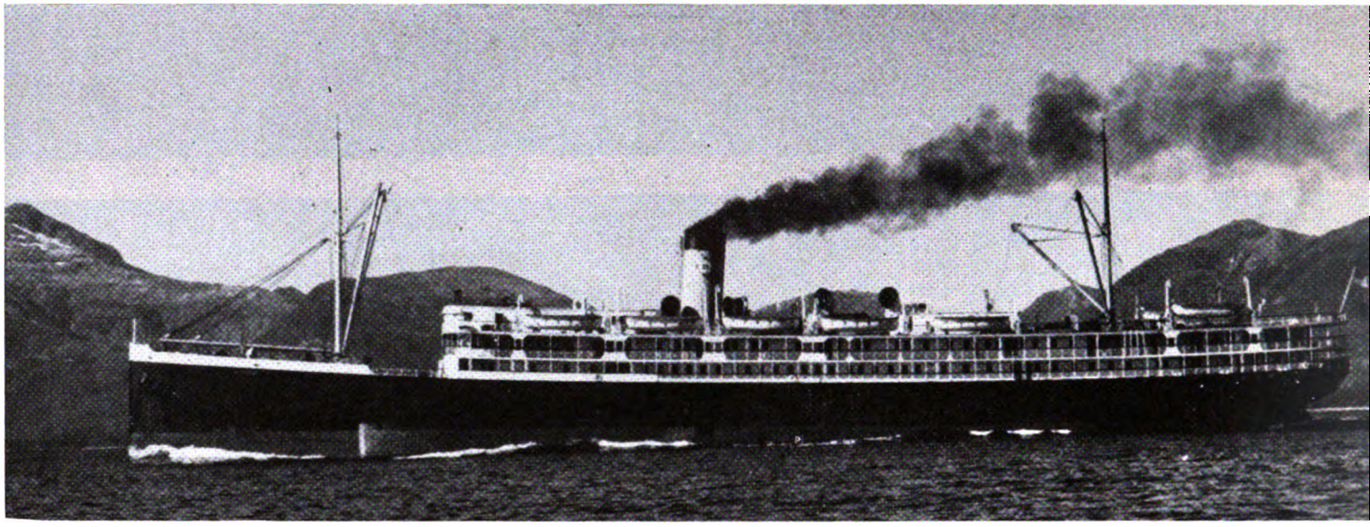
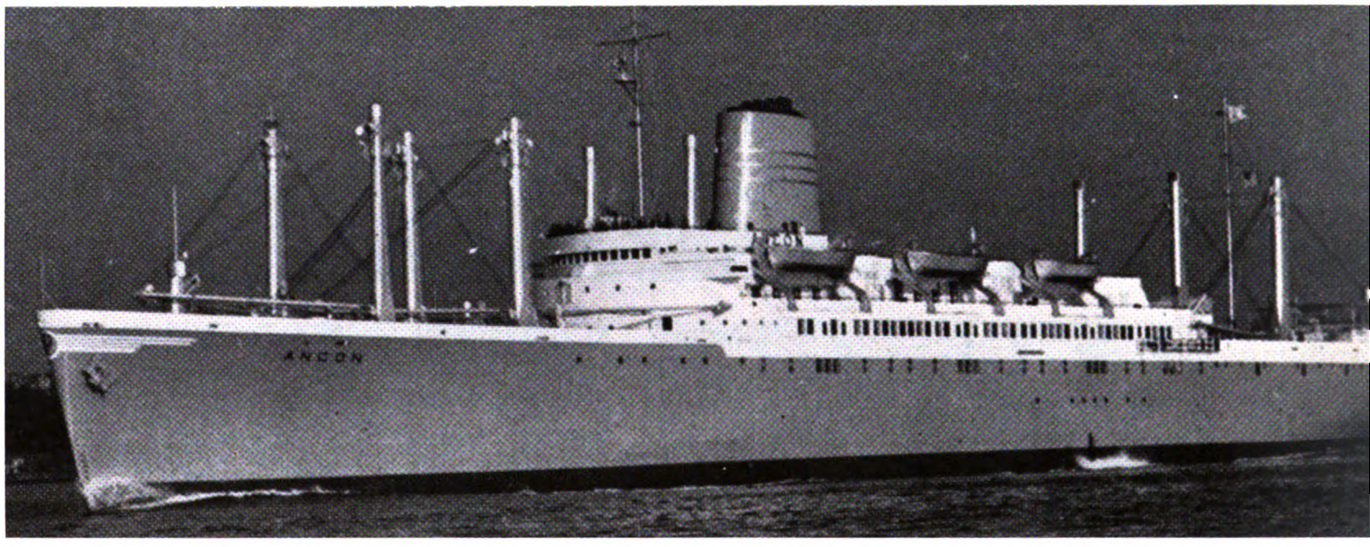


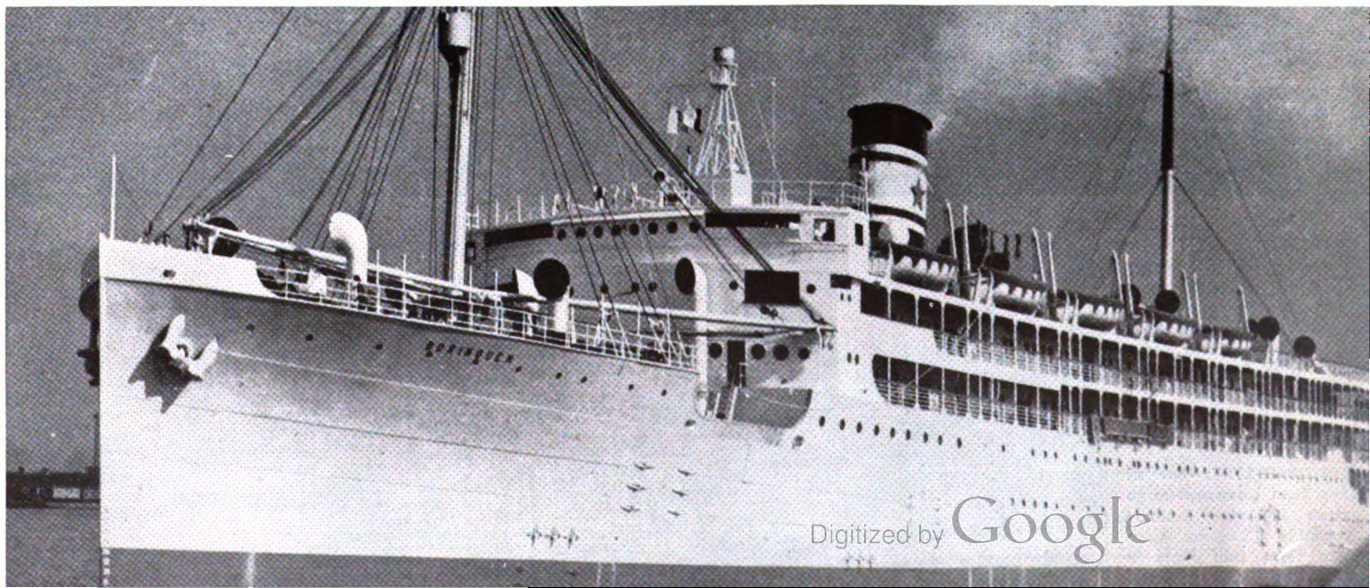
SS VERAGUA—one of United Fruit Company's six 100-passenger first class vessels. This ship, together with her sisters JAMAICA and TALAMANCA provide a weekly sailing from New York on 18-day cruises to Havana, Cristobal, and Puerto Barrios at a minimum fare of $360. Two other sisters, the QUIRIGUA and ANTIQUA maintain a weekly schedule between New Orleans, Havana and Puerto Barrios with 11-day cruises starting at $220. The other sister ship, the CHIRIQUI, departs bi-weekly for an 11-day cruise from New Orleans to Cristobal and Puerto Barrios for $220 minimum fare.



SS ALEUTIAN—of the Alaska Steamship Company sails between Seattle, Washington and Ketchikan, Juneau, Cordova, Valdez and Seward. The 496-passenger ALEUTIAN, together with the line's 358-passenger DENALI and the 333-passenger BARANOF, maintain weekly sailing schedule.



SS ANCON—a 202-passenger vessel operated with her sister ships, the CRISTOBAL and the PANAMA, by the Panama Line between New York and the Canal Zone.



SS BORINQUEN — 380-passenger cruise ship of the New York and Porto Rico Steamship Company, AGWI Lines' subsidiary, offers 11-day cruises on an every other week schedule from New York to San Juan, Puerto Rico, and Trujillo City, Dominican Republic, at a rate beginning at $189.

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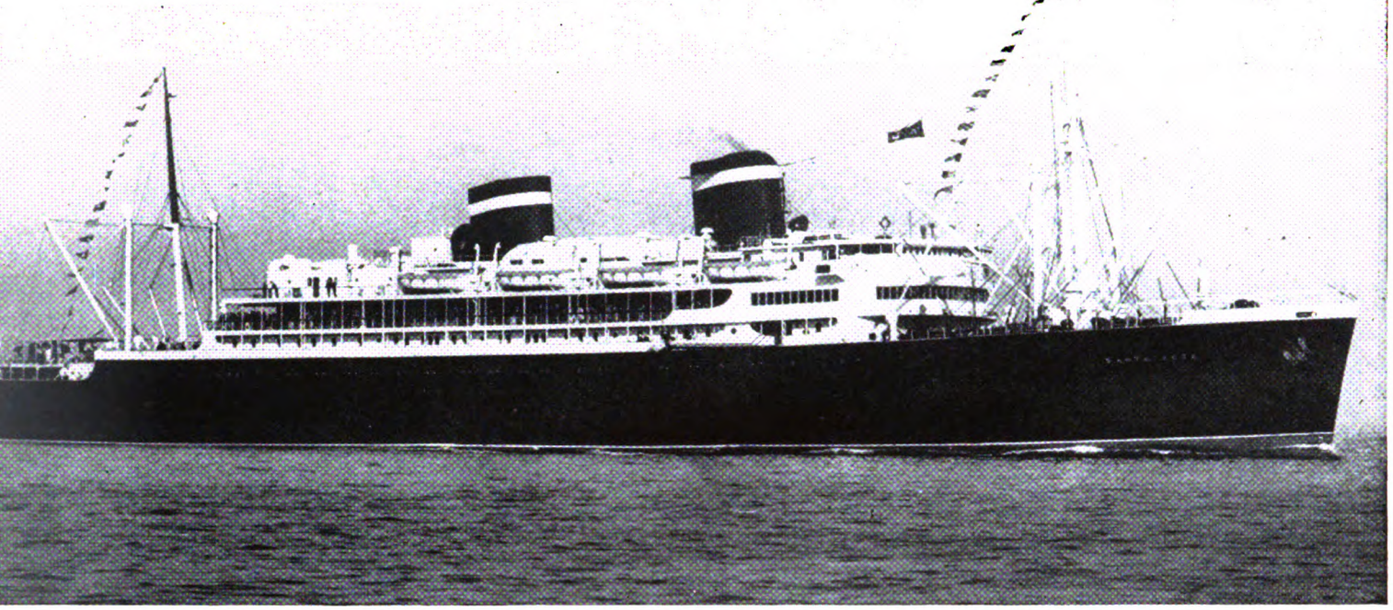
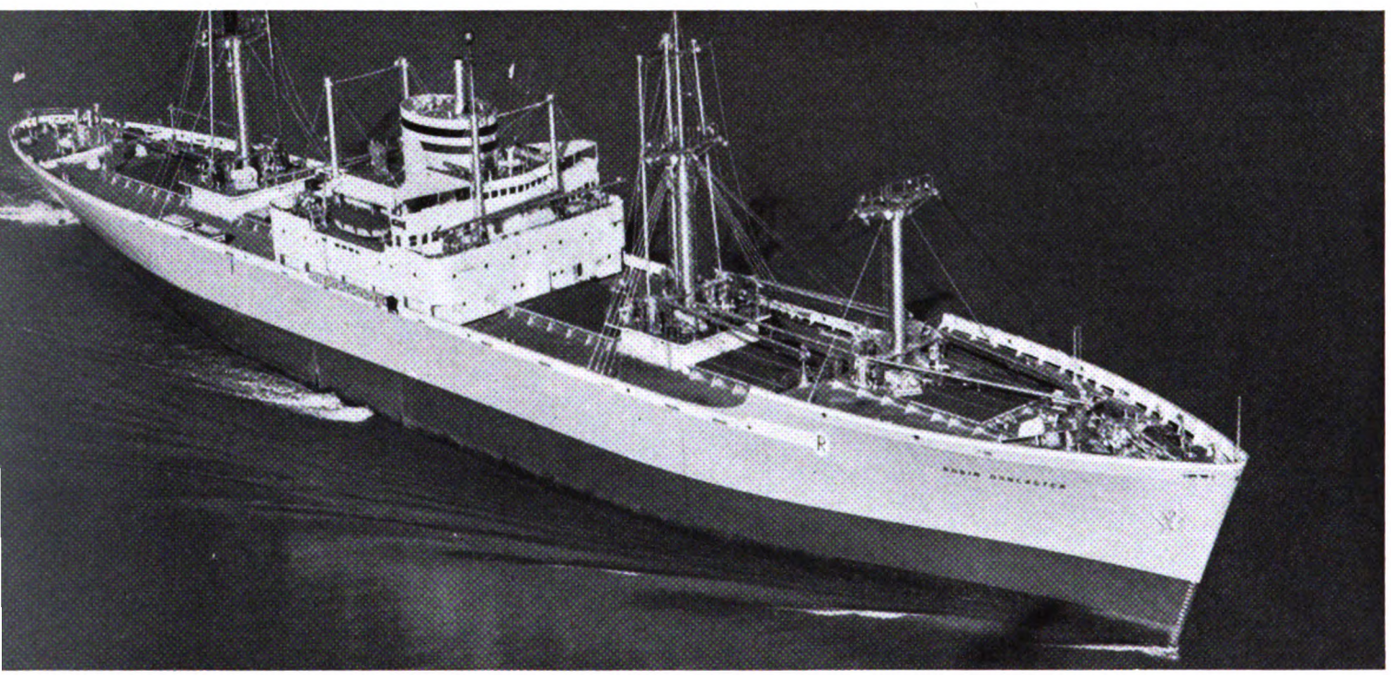
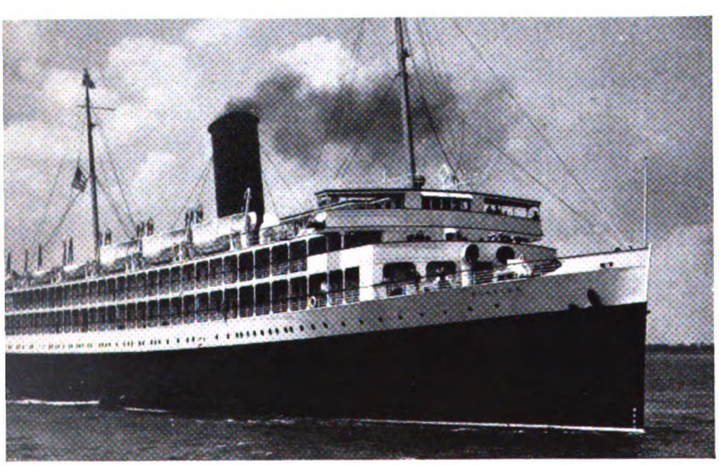


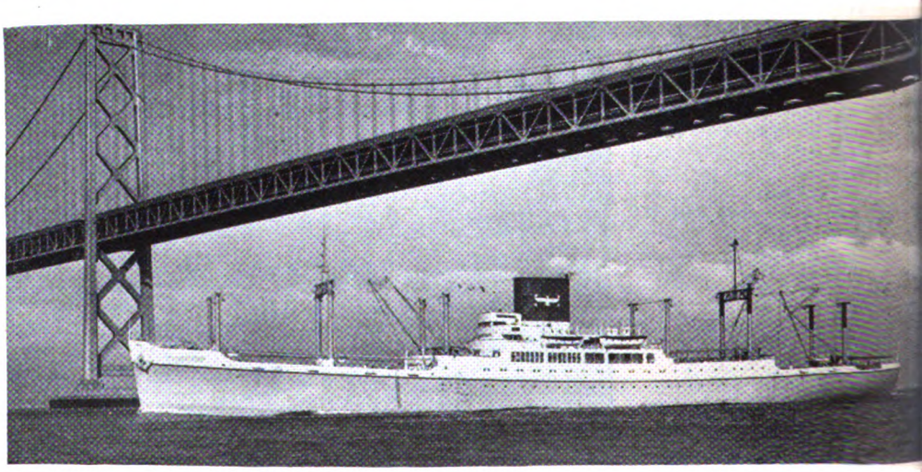
SS SANTA ROSA — one of Grace Line's two deluxe 225-passenger cruise ships offering weekly sailings from New York on 12-day cruises to the Caribbean and north coast of South America. Together with her sister ship, the SANTA PAULA, the two ships make regular stops at Willemstad, Curacao, La Guaira, Puerto Cabello and Cartagena.



SS ROBIN DONCASTER — one of the Robin Line's twelve passenger-cargo vessels in operation between New York and South and East Africa. Ports of call are Capetown, Port Elizabeth, East London, Durban, Lourenco, Marques, Beira, Mombasa, Tanga, Dar-es-Salaam, Madagascar and Mauritius.

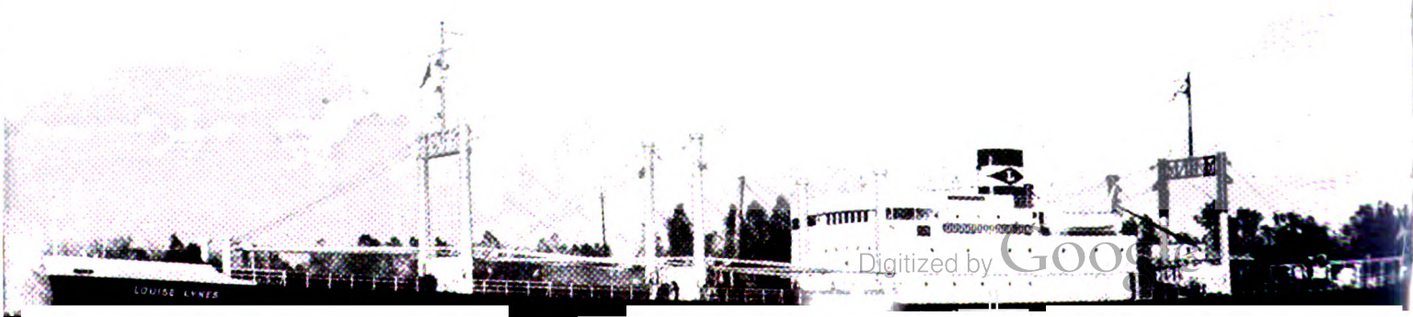
SS PRESIDENT POLK—Round the-world 98-passenger liner of the American President Lines which maintains this passenger service with her sister ship the PRESIDENT MONROE.





SS FLORIDA—of the Peninsular and Occidental Steamship Company, with a passenger capacity of 600, maintains overnight sailings between Miami, and Havana at a round-trip fare of $53.13.

SS LOUISE LYKES—one of fifty fast passenger-cargo vessels of Lykes Brothers Steamship Company operating from Gulf Ports in the United States to world



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AMERICAN OWNED FLEETS

Steamship Company	Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade
Alaska SS Co.	Alaska	Steam	4514	220 Meas.-tons	334	Alaska
	Aleutian	"	6361	250 Meas.-tons	478	"
	Baranof	"	4990	165 Meas.-tons	333	"
	Denali	"	4302	235 Meas.-tons	358	"
	Victoria	"	3656	200 Meas.-tons	None	"
Alaska Transportation Co.	SS Tongass	Steamship	999tons	13,480cuft	12	Southeastern Alaska
	SS Geo. Washington	Pass.-Steam	5184		285	Southeastern
	SS Empire Consequence	Freighter (Comb. Freight & Passenger)	1998	30,000cuft	12	Southeastern
Alcoa Steamship Co., Inc	Alcoa Cavalier	VC2-S1-AP7	8,481	13,827	95	Pass.-Cargo
	Alcoa Clipper	"	8,481	"	"	"
	Alcoa Corsair	"	8,481	"	"	"
	Alcoa Partner	C1-B	6,711.2	None	12	Freighters
	Alcoa Pegasus	"	6,711.2	None	"	"
	Alcoa Pennant	"	6,679.51	12,100	"	"
	Alcoa Pilgrim	"	6711.2	None	"	"
	Alcoa Pioneer	"	6,759.35	"	"	"
	Alcoa Planter	"	6,711.2	"	"	"
	Alcoa Pointer	"	6,711	"	"	"
	Alcoa Puritan	"	6,711	3,543	"	"
	Alcoa Ranger	C2-S-AJ1	8,182	None	"	"
	Alcoa Roamer	"	8,172	"	"	"
	Alcoa Runner	"	8,258	"	8	"
	Alcoa Polaris	C1-B	6,679.51	10,800	12	"
	Alcoa Patriot	"	6,759	11,431	"	"
American Eastern Corp.	MV Gadsden	Converted C1-M-AV-1	3,884	9,830 Bale cu. ft.	18	Foreign
	SS Queenston Hghts.	T-2 Tanker	10448			"
American Export Lines	Exploror	Freight	6736			Mediterrean and India via Suez Canal from North Atlantic U. S. Coast Ports
	Exchange	"	"	"		
	Exemplar	"	"	"		
	Exhibitor	"	"			
	Examiner	"				
	Exceller	"	6535			
	Exanthia	"	6533			
	Exiria	"	"			
	Extavia	"	6535			
	Excelsior	"	7618			
	Exchequer	"	6683			
	Exminster	"	6685			
	Exchester	"	7129	30,000 cuft		
	Executor	"	"			
	Exporter	"	7047			
	Exbrook	"	"			
	Exford	"	"			
	Exton	"	7607	None		
	Exmouth	"	"	"		
	Express	"	6770	"		
American Foreign SS Corp.	American Robin	Liberty	7247			Foreign
	American Oriole	"	7200			"
	American Starling	"	7210			"
	American Eagle	"	7176			"
American-Hawaiian	Alabaman	Freighter	7004.26			Foreign
	Floridian	"	6998.65			"
	Hawaiian	"	4868.32			"
	Minnesotan	"	7061.48			"
	Arkansan	Liberty				
American Mail Line, Ltd.	SS American Mail	C3	7917	None	12	Oriental
	SS Canada Mail	"	7970	"	"	"
	MV China Mail	C2	6606	28,150CF	"	"
	SS India Mail	C3	7909	None	"	"
	MV Iceland Mail	C2	6622	28,150CF	"	"
	SS Java Mail	C3	8027	None	"	"
	MV Ocean Mail	C2	6606	28,150CF	"	"
	SS Oregon Mail	C3	7886	41,537CF	"	"
	SS Washington Mail	"	7943	41,537CF	"	"
American Marine Corp.	Stony Point	Steam Tanker	10,172			Foreign
	Camp Namanu	"	"			"
	Arickaree	"	"			"
American Oil Company	Pan-Amoco	Tanker	9927			Gulf-Atlantic Coast Ports
	Pan-American	"	"			
American Pacific Steamship Company	Ampac Los Angeles	EC 2-S-C1	7210	Nil	Nil	Tramp
	Ampac California	T2-SE-A1	10195	"	"	Time Chartered
	Ampac Washington	"	10448	"	"	Tramp
American President Lines	President Pierce	C3	7,924.93	47,605	8	Transpacific
	President Grant	"	7,963.80	"	"	"
	President Taft	"	7,962.63	"	"	"
	President Madison	"	7,924.93	"	"	"
	President McKinley	"	"	"	"	"
	President Polk	"	9,260.92	43,215	98	Round-World
	President Jefferson	"	7,924.93	47,605	8	Transpacific
	President Monroe	"	9,255.86	43,215	98	Round-World
	President Harding	AP-3	7,606	None	4	Transpacific
	President Tyler	"	"	"	"	Round World
	President Fillmore	"	7,607	"	"	"
	President Buchanan	"	7,606	"	"	"
	President Cleveland	P2	23,000	33,481CF	550	Transpacific
	President Wilson	"	"	"	"	"
Amer. So. African Line, Inc.	African Crescent	C3	7972	24,280	12	So. & E. Africa
	African Dawn	C2	6508	27,434	"	"
	African Glade	C2	6214	8,000	"	W. Africa
	African Glen	C2	6116	"	"	"
	African Grove	"	6214	"	"	"
	African Lightning	C3	7974	24,280	"	So. & E. Africa
	African Moon	"	"	"	"	"
	African Planet	"	7971	21,478	"	"
	African Rainbow	"	"	24,280	"	"
	African Star	"	"	21,478	"	"
	African Sun	C2	6508	27,434	"	"
	MV African Guide	(FS)	573.25	None	"	West African Coastal
	SS African Patriot	C-2	6214.41	3,588	"	West Africa
	SS African Pilgrim	"	8233.13	"	"	S. & E. Africa
	SS African Pilot	"	6214.41	"	"	West Africa
The Atlantic Refining Co.	SS Atlantic Coast	Tanker	8,529	None	None	Coastwise & Foreign
	SS Atlantic Dealer	"	10,296	"	"	"
	SS Atlantic Exporter	"	10,296	"	"	"
	SS Atlantic Mariner	"	10,296	"	"	"
	SS Atlantic Ranger	"	10,294	"	"	"
	SS Atlantic Refiner	"	10,296	"	"	"
	SS Atlantic States	"	8,535	"	"	"
	SS Atlantic Trader	"	10,296	"	"	"

Steamship Company	Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade
The Atlantic Refining Co. (continued)	SS E. H. Blum	Tanker	11,638	None	None	Coastwise &
	SS E. J. Henry	"	11,615	"	"	Foreign
	SS J. W. Van Dyke	"	11,651	"	"	"
	SS Robert C. Tuttle	"	11,615	"	"	"
	SS W. C. Yeager	"	11,615	"	"	"
	MS Franklin	"	601	"	"	Inland Waters
	MS Brunswick	"	8,890	"	"	Coastwise &
	MS Permian	"	8,890	"	"	Foreign
Bernuth, Lembcke Co., Inc.	SS O. M. Bernuth	Tanker	7,972			Coast-Foreign
	SS Albert G. Brown	"	7,218			"
	SS Eliza J. Nicholson	"	7,218			"
	SS Fullerton Hills	"	10,441			"
	SS Adelien	"	9,807			"
	SS Catham*	"	10,297			"
	*The S.S. CATHAM has been bare-boat chartered to the Tidewater Oil Associates					
Blidberg Rothchild Co., Inc.	U. S. O.	Liberty EC2-S-C1	7176			Tramp
A. H. Bull & Co. (Agts.)	Beatrice	Frt. & Pass.	8189	23,000 cuft	12	
	Elizabeth	"	8258	"	"	
	Frances	"	"	"	"	
	Kathryn	"	8189	"	"	
	Suzanne	"	"	"	"	
	Edith	Freight	6643			
	Evelyn	"	"			
	Mae	"	"			
	Arlyn	"	7191			
	Carolyn	"	"			
	Cornelia	"	3129	121,788 cuft		
	Dorothy	"	4647			
	Emilia	"	4719			
	Helen	"	3128	121,788 cuft		
	Hilton	"	4741	165,000 cuft		
	Jean	"	4902			
	Angelina	"	7176			
	Marina	"	7200			
	Monroe	"	5533			
	Rosario	"	7191			
Calmar SS Corp.	Calmar	Steam Frt.	7207	None	None	U.S. Intercoast
	Penmar	"	"	"	"	
	Marymar	"	"	"	"	"
	Massmar	"	"	"	"	"
	Yorkmar	"	"	"	"	"
	Alamar	"	"	"	"	"
	Seamar	"	"	"	"	"
	Portmar	"	"	"	"	"
Catalina Island Steamship Line	SS Catalina	Steamer-Steel	1766		1956	Pkg. & Pass.
	SS Avalon	"	1985		1625	"
	and tow boats					Catalina Island
Cities Service Oil Co.	SS Abiqua	T2	10,172			Ocean
	SS Lone Jack	"	10,296			"
	SS French Creek	"	"			"
	SS Council Grove	"	10,173			"
	SS Chiwawa	T3	10,279			"
	SS Paoli	T2	10,296			"
	SS Cantigny	"	"			"
	SS Logan's Fort	"	"			"
	SS Archer's Hope	"	10,172			"
	SS Royal Oak	"	10,296			"
	SS Winter Hill	"	"			"
	SS Government Camp	"	10,448			"
	SS Fort Hoskins	"	"			"
	SS Salem Maritime	"	"			"
	SS Benta Fort	"	"			"
	SS Bradford Island	"	"			"
Coastwise Bulk Carriers, Inc.	SS Horace See	Lbr. Tanker				
	SS Harvey W. Wiley	"				
Commercial Molasses Corp.	SS Comol Cuba	Tanker	5036	None	None	Molasses
Continental Oil Co.	Lake Charles	St. Tanker	9900			Coastwise
	W. H. Ferguson	"	8135			"
Coral Steamship Corp. (Orian Shipping & Trading)	Coral Sea	Steam-Frt.	7,221			Unscheduled
Cosmopolitan Ship. Co., Inc.	Donald W. Bain	Liberty	7200	None	None	No. France
Dichmann Wright & Pugh, Inc.	Wm. H. Kendrick	EC 2	7176			Far East
Eastern SS Lines, Inc.	Yarmouth	Pass & Cargo	5002.78		600	Near by Foreign
	Evangeline	"	"		"	"
	Acadia	Undergoing survey for re-conversion to passenger service				
Eastport SS Corp	Empire Roding	Cargo	2957			Tramp
	Westport	Lbr. Tanker	7218			"
Edison Steamship Corp.	Edison Mariner	EC2-SC1	7176	None	12	Tramp
Edison Tanker Co., Inc.	David Rittenhouse	Z-ET1-S-C3	7243	"	None	World-wide
Fall River Nav. Co.	SS Yankee Star	Liberty	7176	None	None	Tramp
Federal Motorship Corp.	Mosoil	St. Tanker	7641	None	None	
	Mostank	St. Tanker (Liberty type)	7218	"	"	
Flanigan, Loveland, Inc.	John Flanigan	T2 Tanker	10448			World-wide
	Samuel C. Loveland	"	10195			"
	Elizabeth A. Flanigan	"	10172			"
Foreign Tankship Corp.	California Standard	MS	11,179			Persian Gulf
	Bahrein	SS	7,095			World-wide
Grace Line, Inc.	Santa Rosa	Pass.-Frt.	9237.29	63601	225	Caribbean
	Santa Paula	"	"	"	"	from N. Y.
	Santa Clara	Modified C-2 Pass-Frt	8610	3513	52	"
	Santa Monica	"	"	"	"	"
	Santa Sofia	"	"	3413	"	"
	Santa Barbara	"	8327.94	93674	"	W. Coast-S.A.
	Santa Cecilia	"	"	"	"	from N. Y.
	Santa Maria	"	"	"	"	"
	Santa Margarita	"	"	"	"	"
	Santa Luisa	"	"	"	"	"
	Santa Isabel	C2	"	"	"	"
	Santa Elisa	"	8297.32	103400	12	"
	Santa Catalina	"	"	"	"	"
	Santa Olivia	"	"	"	"	"
	Santa Ana	"	8095	92800	"	Caribbean
	Santa Ines	"	8297.32	103400	"	from N. Y.
	Santa Teresa	"	8095	92800	"	"
	Santa Eliana	"	8258.27		"	"
	Santa Leanor	"	"		"	W.C.S.A from
	Santa Adela	"	6507.92	27434	"	Pacific Coast,
	Santa Flavia	"	"	"	"	Ports
	Santa Juana	"	"	"	"	"
	Santa Rita	"	8297.32	103400	"	W.S.C.A from N. Y.
Gulf Oil Corporation	Gulfpride	Tanker	12510			U. S., Gulf
	Gulfbird	"	10217			Caribbean and

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AMERICAN OWNED FLEETS *(Continued)*

Steamship Company	Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passengor Capacity	Trade
Gulf Oil Corporation (continued)	Gulfhawk	Tanker	10217			East Coast of U. S.
	Gulfwing	"	"			"
	Gulfcrest	"	8916			"
	Gulf of Venezuela	"	6910			"
	Gulf Maracaibo	"	9306			"
	Gulf Caribbean	"	9299			"
	Gulfport	"	8080			"
	Gulfcoast	"	7140			"
	Gulftide	"	"			"
	Gulfwave	"	"			"
	Gulfdisc	"	"			"
	Pueblo	"	4396			"
	Gulfwax	"	8862			"
	Gulf of Mexico	"	7807			"
	Gulfpoint	"	6972			"
	Gulfstar	"	6969			"
	Gulfgem	"	6917			"
	Gulfking	"	6560			"
	Transferred to Belgian Gulf Oil					
	Belgian Gulf	Tanker	8148			"
	Good Gulf	"	7788			"
	Spidoleine	"	6014			"
				Former Name		
	Gulfdawn	Tanker	10195	San Antonio		
	Gulflight	"	"	Jalapa		
	Gulfstream	"	"	Cross Keys		
	Gulftrade	"		Spottsylvania		
	Gulfmoon	"	10266	Fort Mifflin		
	Gulfhorn	"	10296	Roxbury Hill		

Steamship Company	Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade
Gulf Oil Corporation (continued)	Gulfray	Tanker	10296	Bushy Run		
	Gulfshore	"	"	Somme		
	Gulfhaven	"	"	Spring Hill		
	Gulfscout	"	"	Fort Schuyler		
	Gulfmills	"	"	Musgroves Mill		
	Gulfbrand	"	"	Drewys Bluff		
	Gulfoil	"	10340	Neshanic		
	Gulfland	"	19600	Moors Fields		
	Great Meadows	"	10195			
	Vicksburg	"	"			
	Golden Hill	"	10172			
	Raton Pass	"	"			
	Wahoo Swamp	"	"			
	Kathio	"	"			
	Gulflube	"	8197			
Gulf & South American Steamship Co., Inc.	Gulf Merchant	C-2 Cargo	8250		12	U.S. Gulf Ports to West Coast South American Ports, Columbia, Ecuador, Peru Bolivia, Chile
	Gulf Banker	"	"		"	
	Gulf Shipper	"	"		"	
	Gulf Farmer	"	"		"	
Hillcone SS Company	Str. Sangamon	Tanker	11,323			Foreign
	Str. Cornell	"	10,180			"
	Str. Salinas	"	8,246			Coastwise
	Str. Trinity	"	8,267			"
	Str. John P. Altgeld	"	7,243			Coast-Foreign
	Str. Alan Seeger	"	7,208			"
International Freighting Corporation, Inc. As Agents For Cuba Distilling Company	SS Carrabulle	Tanker	7227.20	No	No	Molasses-West Indies Ports
	SS Catahoula	"	"	"	"	"
Interstate Nav. Co.	Elizabeth-Ann	Pass.-Freight	77		99	Pt. Judith, R.I. Block Is., R.I.
	Rocket	Pass.	59		120	"
	Whitecap	"	34		75	Cape Cod Canal
Isbrandtsen	SS Flying Cloud	C2-S-B1	6214	None	12	Far East
	SS Flying Arrow	"	"	"	"	"
	SS Flying Independent	C1-B-(S)	6711	"	"	"
	SS Flying Enterprise	"	"	"	"	"
	SS Sir John Franklin	"	"	"	"	"
Isthmian SS Co.	Anniston City	Shelter	5686		None	World-wide
	Atlantic City	"	"		"	"
	Montgomery City	"	"		"	"
	Steel Inventor	"	"		"	"
	Steel Mariner	"	"		"	"
	Steel Rangor	"	"		"	"
	Steel Advocate	C3 Shelter	8000		12	"
	Steel Architect	"	"		"	"
	Steel Artisan	"	"		"	"
	Steel Designer	"	"		"	"
	Steel Worker	"	"		"	"
	Steel Director	"	"		"	"
	Steel Maker	"	"		"	"
	Steel Navigator	"	"		"	"
	Steel Age	"	"		"	"
	Steel Executive	"	"		"	"
	Steel Seafarer	"	"		"	"
	Steel Traveler	"	"		"	"
	Steel Scientist	"	"		"	"
	Steel Flyer	"	"		"	"
	Steel Fabricator	"	"		"	"
	Steel Admiral	"	"		"	"
	Steel Vendor	"	"		"	"
	Steel Surveyor	"	"		"	"
	Steel Recorder	"	"		"	"
	Steel Chemist	"	"		"	"
	Steel King	"	"		"	"
	Steel Voyager	"	"		"	"
	Steel Apprentice	"	"		"	"
	Steel Rover	"	"		"	"
Keystone Shipping Co.	Atlantic Traveler	T-2 Tanker	10,195			
Keystone Tankship Corp.	Bennington	T-2 Tanker	10,378			
	Bunker Hill	"	10,410			
	Catawba Ford	"	10,317			
	Cherry Valley	"	10,390			
	Monmouth	"	10,434			
	Ticonderoga	"	10,172			
Chas. Kurz & Co., Inc.	Andrew A. Humphreys	Liberty	7,218			
	Gaines Mill	T-2 Tanker	10,195			
	Mill Spring	"	10,408			
	Oscar S. Straus	Liberty	7,218			
	Perote	T-2 Tanker	10,195			
	Tullahoma	"	10,296			
Luckenbach SS Co.	Andrea F. Luckenbach	C2-S-AJ1	8170.86		12	Intercoastal-For.
	Edgar F. Luckenbach	"	"		"	"
	Edward Luckenbach	C3-S-A2	7870.16		"	"
	Florence Luckenbach	C2-S-AJ1	"		"	"
	Jacob Luckenbach	C3-S-A2	7869.25		"	"
	J. L. Luckenbach	Owners (1)	8582.48		2	"
	Julie Luckenbach	C2-S-AJ1	8162.28		12	"
	Katrina Luckenbach	Owners (2)	7942.18			"
	K. I. Luckenbach	Owners (3)	7896			"
	Mary Luckenbach	C2-S-AJ1	8162.20		12	"
	Mathew Luckenbach	C3-S-A2	7870.44		"	"
	Nira Luckenbach	"Hog Island"	5029.43		1	"
	Walter A. Luckenbach	Owners (4)	8077.49		2	"
Lykes Bros SS Co., Inc.	Adabelle Lykes	C1-A	5093		12	World-wide
	Aimee Lykes	C2	6214		"	"
	Almeria Lykes	C3	7996		"	"
	Barbara Lykes	C2	6214		"	"
	Charles Lykes	C2	8250		"	"
	Dick Lykes	C2	8250		"	"
	Doctor Lykes	C3	7854		"	"
	Dolly Turman	C2	6214		"	"
	Elizabeth Lykes	C2	8258		"	"
	Eugene Lykes	C2	8258		"	"
	Frank Lykes	C2	8258		"	"
	Fred Morris	C1-B	6711		"	"
	Frederick Lykes	C3	7773		"	"
	Genevieve Lykes	C2	8258		"	"
	George Lykes	C1-B	6711		"	"
	Gibbes Lykes	C2	8258		"	"
	Harry Culbreath	C2	8258		"	"
	Helen Lykes	C2	6214		"	"

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SOPAC SHIP MAINTENANCE INC., are now licensed to use the BUTTERWORTH SYSTEM for Tank and Ship Cleaning purposes.

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AMERICAN OWNED FLEETS *(Continued)*

Steamship Company	Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade
Lykes Bros. S. S. Co., Inc. (continued)	Howell Lykes	C3	8252		12	World-wide
	James Lykes	C1-B	6760	"	"	"
	James McKay	C2	8258	"	"	"
	Jean Lykes	C1-B	6711	"	"	"
	Jesse Lykes	C2	8258	"	"	"
	John Lykes	C1-B	6829	"	"	"
	Joseph Lykes	C1-B	6829	"	"	"
	Kendall Fish	C2	8250	"	"	"
	Kenneth McKay	C2	8258	"	"	"
	Letitia Lykes	C2	6214	"	"	"
	Lipscomb Lykes	C3	7858	"	"	"
	Louise Lykes	C2	8258	"	"	"
	Mallory Lykes	C2	6214	"	"	"
	Margaret Lykes	C2	6214	"	"	"
	Mason Lykes	C2	8258	"	"	"
	Nancy Lykes	C1-B	6711	"	"	"
	Norman Lykes	C3	7858	"	"	"
	Reuben Tipton	C2	8258	"	"	"
	Ruth Lykes	C2	8258	"	"	"
	Solon Turman	C1-B	6711	"	"	"
	Stella Lykes	C2	8258	"	"	"
	Sue Lykes	C2	8258	"	"	"
	Sylvia Lykes	C2	6214	"	"	"
	Thompson Lykes	C1-B	6762	"	"	"
	Tillie Lykes	C3	7996	"	"	"
	Tyson Lykes	C2	8258	"	"	"
	Velma Lykes	C2	8258	"	"	"
	Virginia Lykes	C2	6214	"	"	"
	William Lykes	C2	8258	"	"	"
	Zoelia Lykes	C1-B	6829	"	"	"
Marine Transport Lines	Marine Courier	EC2-S-C1	7176.49			Bulk Cargo
	Marine Merchant	"	"			"
	Marine Trader	EC2-S-AW1	43.05			"
	Marine Transport	"	"			"
	Malay	Sing Scr TV	8206			Bulk Oil
	Swiftarrow	"	"			"
	Tagalam	Sing Scr MT	10290.77			"
	Archers Hope	T2-SE-A1	10172.70			"
	Black River	"	"			"
	Charlestown	"	10195.33			"
	Fort Schuyler	"	10296.64			"
	Heron's Bridge	"	"			"
	Jacob Thompson	ZET1-S-C3	7218.83			"
	Moccasin Gap	T2-SE-A1	10172.70			"
	Paulus Hook	"	"			"
	Raton Pass	"	"			"
	Richard J. Cleveland	ZET1-S-C3	7208			"
	Sante Fe Hills	T2-SE-A1	10441.95			"
	Spirit Lake	"	10172.70			"
	Tobias E. Stansbury	ZET1-S-C3	7176.49			"
	Voshell	T1-M-BT1	3210			"
	War Bonnet	T2-SE-A1	10172.70			"
	White River	"	"			"
	Cape Cameo	C1MAV1	3805.18	9830 cuft	10	Gen'l Cargo
	Monocacy	T2-SE-A1	10172.70			Bulk Oil
	Palo Alto	"	"			"
	Patuxent	"	"			"
	San Juan Hill	"	"			"
	Autoesle	"	"			"
	Pinnacles	"	"			"
	Stoney Point	"	"			"
Matson Nav. Co.	Lurline	Passenger	18,163	60,000	722	Hawaiian
	Mokihana	Cargo	7,460			"
	Mahimahi	"	7,350			"
	Manulani	"	9,556	32,647		"
	Hawaiian Banker	"	7,886	42,000		"
	Hawaiian Fisherman	"	"	42,000		"
	Hawaiian Planter	"	"	"		"
	Hawaiian Educator	"	"			"
	Hawaiian Forester	"	7,240			"
	Hawaiian Merchant	"	7,886	60,000		"
	Hawaiian Builder	"	"	"		"
	Hawaiian Logger	"	7,176			"
	Hawaiian Lumberman	"	7,247			"
	Hawaiian Craftsman	"	7,886	42,000		"
	Hawaiian Packer	"	"			"
	Hawaiian Rancher	"	"	60,000		"
	Hawaiian Farmer	"	"	"		"
	Hawaiian Retailer	"	"			"
	Hawaiian Citizen	"	"	60,000		"
	Hawaiian Refiner	"	"	"		"
	Hawaiian Pilot	"	"	"		"
	Hawaiian Wholesaler	"	"	"		"
Mississippi Shipping Co., Inc. (Delta Line)	Del Aires	Steam	6509	29961 cuft	12	East Coast of So. America U. S. —W. L. Plate
	Del Alba	"	8258	None	"	
	Del Valle	"	"	"	"	
	Del Mundo	"	"	"	"	
	Del Santos	"	"	"	"	
	Del Mar	"	10073	57438 cuft	119	
	Del Norte	"	"	"	"	
	Del Sud	"	"	"	"	
	Del Oro	Diesel	5146	None	12	U. S. Gulf, W.I. No. Br. West Africa U. S. Gulf W.I. Plate
	Del Rio	"	5163	"	"	
	Del Sol	"	7061	"	"	
	Del Monte	Steam	5124	"	"	
	Del Campo	"	5124	"	"	
	Del Viento	Diesel	6935	"	"	
Moore-McCormack Lines	Mormacmoon	C3-SA-2	7939.71	None	12	
	Mormacport	C3	7773.	"	"	
	Mormacsea	C3 (Special)	7773.09	36,511	"	
	Mormacstar	"	7773.10	"	"	
	Mormacsun	"	7773.09	"	"	
	Mormactide	"	7954	38,040	"	
	Mormacwave	C3	7949.81	14,645	"	
	Mormacyork	C3 (Special)	7796	35,410	"	
	Mormacsurf	C3-SA-2	7939.71	36,000		
	Mormacrey	"	"	"	"	
	Mormacmar	"	"	"	"	
	Mormacrio	"	7888.4	42,772	"	
	Mormachawk	C2-S-B1	6214.41		8	
	Mormacwren	"	"	42,772	"	
	Mormacdove	"	"	"	"	
	Mormaclark	C1-B	6711.20		12	
	Mormacdale	C1-A	5105.16		8	
	Mormactern	C1-B	6711.20		12	

Steamship Company	Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade
Moore-McCormack Lines (continued)	Mormacswan	C2 (Special)	7194	28,430	8	
	Mormacpine	VC2-AP3	7607.51		None	
	Mormacelm	"	"	28,430	"	
	Mormacoak	"	"	"	"	
	Mormacgulf	C3-SA-5	7909.19	69,728	12	
	Mormacisle	"	"	"	"	
	Mormacdawn	"	"	"	"	
	Mormacland	"	"	"	"	
	Mormacmail	"	"	"	"	
	Mormacpenn	"	"	"	"	
	Mormacsaga	"	"	"	"	
	Mormackite	C2-SB-1	6214.41		8	
	Mormacowl	"	"	69,728	"	
	Mormacteal	"	"	"	12	
	Mormacreed	C1-B	6711.20		"	
	Mormacfir	VC2-AP3	7607.51		None	
Motor Tankship Corp. (Sun Oil Co., Operators)	America Sun	Motor	11355	17955		Gulf-No. Hatteras
	Pacific Sun	"	9097	14540		"
	Chester Sun	"	"	14584		"
	Western Sun	"	9100	"		"
	Eastern Sun	"	"	"		"
	Northern Sun	"	8923	14677		"
	Southern Sun	"	8952	14828		"
Mount SS Corp.	Alabaman	Freighter	4380			Foreign
	Arkansan	"	4375			"
	Carolinian	"	4378			"
Munargo Line Company	Cape Ann	Cargo	6111		12	Caribbean
	Cape Avinof	"	5124		8	"
	Fiador Knot	"	3805			"
	Lever's Bend	"	"			"
Mystic SS Div. Eastern Gas and Fuel Associates	A. L. Kent	Collier	6030	None	None	Coastwise Coal
	Arlington	"	6643	"	"	"
	Boston	"	"	"	"	"
	Concord	"	"	"	"	"
	Edward Pierce	"	4387	"	"	"
	Everett	"	6643	"	"	"
	Lexington	"	"	"	"	"
	Malden	"	"	"	"	"
	Melrose	"	"	"	"	"
	Newton	"	"	"	"	"
	Reading	"	"	"	"	"
	Thomas P. Beal	"	6032	"	"	"
	Walter D. Noyes	"	4387	"	"	"
	Winchester	"	6643	"	"	"
			D.W. Tonnage	Gross Tonnage		
National Bulk Carriers, Inc.	Amtank	Phoenix	23,489	14,209		
	Battle Mountain	T-2†	16,804	10,420		
	Bulkcrude	Virginia	18,600	11,016		
	Bulkero	"	"	"		
	Bulkfuel	"	"	"		
	Bulklube	"	"	11,017		
	Calabee	T-2	16,493	10,172		
	Evans Creek	"	16,615	"		
	Fishers Hill	T-2†	16,331	10,195		
	Five Forks	T-2	16,304	10,230		
	Fort Charlotte	T-2	16,738	10,448		
	Hampton Roads		23,489	14,136		
	Hat Creek	T-2†	16,580	10,173		
	Joshua Tree	T-2†	16,965	10,173		
	Kapoela	T-2†	16,965	10,173		
	Nash Bulk	Pheonix	23,514	14,164		
	Pan Georgia	T-2‡	15,210	9,118		
	Pan Massachusetts	Virginia	18,600	11,015		
	Pendleton	T-2	16,738	10,448		
	Pheonix		18,283	14,179		
	Silver Peak	T-2†	16,738	10,448		
	Trimbles Ford	T-2*	18,283	11,670		
	Virginia		18,600	10,944		
	Wagon Box	T-2	16,650	10,172		
	Whittier Hills	T-2	16,443	10,441		
Oceanic Tankships, S. A.	Ulysses		27,928	14,002		
National Pet. Transp. S. A.	Trans Pet	T-1	4,408	2,949		
	Trans Pan	T-1	4,408	2,949		
International Tankers, S. A.	Transoil		2,511	1,572		
	Petrofuel		12,610	7,294		

†—Modified by reengining with geared turbines
‡—Modified by reengining with geared turbines and shortening 36 ft x 6 in.
*—Modified by reengining and by lengthening vessel 41 ft. x 0 in.

The New York and Porto Rico Steamship Company	Agwicomet	C2	6103		12	N.Y.-P.R.-D.R.
	Agwidawn	"	6125		"	"
	Agwiqueon	"	6161		"	"
	Borinquen	Pass-Cargo	7114	12,982	354	"
	Cape Nome	C1-A	5124		12	"
New York and Cuba Mail Steamship Company	Agwidale	C2	7224	13,470	"	N. Y.-Havana
	Agwiking	"	"	"	"	"
	Cape Alexander	C1-B	6711		"	N.Y.-V.C.-Tamp.
	Cape Chalmers	"	"		"	"
	Cape Race	C1-A	5124		"	"
	Cape Spear	C2	6100		"	"
R. A. Nicol & Co., Inc.	Benjamin Rush	Liberty	7176			Bulk-Tramp.
	Francis C. Harrington	"	"			"
	Joseph M. Terrell	"	"			"
	Raymond B. Stevens	"	"			"
	Frank P. Reed	"	"			"
	Frank P. Walsh	"	"			"
	F. Scott Fitzgerald	"	"			"
North American Shipping and Trading Co., Inc.	SS Seven Seas	Tanker T2-SE-A1	10172			Foreign
	SS Jeanny	"	10297			"
	SS Memory	"	10173			"
	SS Merrimac	"	10172			"
	SS Monitor	"	10173			"
	SS Mermaid	"	10173			"
North Atlantic and Gulf Steamship Co., Inc.	SS Norcuba	EC2-S-C1	7176	None	None	World-wide
Northeastern Steamship Corp. (Orian Shipping & Trading)	North Beacon	Steam-Frt.	7,198			Unscheduled
Oceanic SS Co.	Mariposa	Passenger	18017	60,000	726	Australasian
	Monterey	"	18170	"	"	"
	Sonoma	Cargo	8258			"
	Ventura	"	"			"
	Sierra	"	"			"
	Alameda	"	"			"
Oliver J. Olson & Co.	Barbara Olson	Freighter	2146			Pac. Coastwise
	Howard Olson	"	2477			"
	George Olson	"	3321			"
	Oliver Olson	"	2235			"
	Karen Olson	"	2119			"

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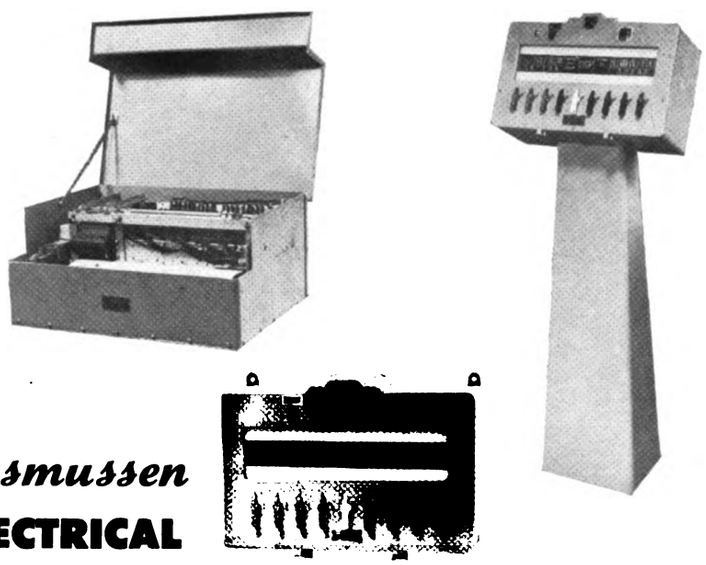
AMERICAN OWNED FLEETS *(Continued)*

Steamship Company	Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade
Olympic SS Co., Inc.	SS Olympic Pioneer	Liberty	7216	None	None	Offshore
Ore Steamship Corporation	Bethore	Ore Carrier	8257			S.A.-U.S.
	Chilore	"	8564			"
	Cornore	"	7051			Cuba
	Cubore	" Approx.	8500			S.A.-U.S.
	Feltore	"	8558			"
	Firmore	"	7117			Cuba
	Marore	"	8558			S.A.-U.S.
	Oremar	"	"			"
	Santore	"	"			"
	Steelore	"	8215			"
	Venore	"	8561			"
	Mangore	Steam Frt.*	6851			"
*—No reefer or passenger capacity						
Pacific-Atlantic Steamship Company	SS Oregon	C2	6214	None	None	Trans-Pacific
	MS Idaho	C1B	6756	"	"	"
Pacific Far East Line, Inc.	Pacific Bear	C2-AJ1	10,775		12	W.C.-Orient
	China Bear	"	"		"	"
	Philippine Bear	C2-AJ3	"		"	"
	California Bear	"	"		"	"
	Indian Bear	"	"		"	"
Pacific Mail SS Co.	Admiral Halstead	Freighter	3289	None	None	Transpacific
	Admiral Nulton	"	3267	"	"	"
Pacific Tankers, Inc.	Montebello Hills	T2-SE-A1	10,442	2,420 cuft	None	Domestic
	McKittrick Hills	"	"	"	"	"
Pacific Trans. Lines, Inc.	Pacific Transport	C-3	7773	55,000	12	Transpacific
	Philippine Transport	"	"	"	"	"
	China Transport	"	"	"	"	"
	America Transport	C-3	7773	None	12	
	Honkong Transport	A-P3	7607.5	None	None	



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The Rasmussen system of communication between the Bridge and the Engine Room is instantaneous and definite, eliminating any possibility for accidents caused by misunderstanding between the captain and the engineer. The signals are made easily, with practically no effort by the operators.

The old engine room telegraph has stiff, sluggish operating mechanism which makes it difficult to give accurate signals to the engineer. The RASMUSSEN ENGINE ROOM TELEGRAPH which is FOOLPROOF, replaces the present common place shipboard engine room telegraph which will be relegated to the limbo of outmoded appliances. This new electrical telegraph system will simplify your bridge to engine room communication. You can have as many transmitters and repeaters as needed.

Every signal and reply including whistle signals are automatically recorded on a chart giving date and time. This recording device provides irrefutable evidence of every command given and replies.

This Telegraph System was on display at the 1948 National Marine Exposition, Grand Central Palace, New York. The interest shown by key men in the marine field and publishers of National Marine Publications speaks for itself.

Complete information furnished upon request.

KARL INSTRUMENTS

1035 HARRISON ST. • SAN FRANCISCO • SUtter 13235

Steamship Company	Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade
Paco Tankers, Inc.	Chancellorsville	Tanker	10,428			
e/o Pennsylvania Shipping Company	Fredericksburg	"	10,398			
	Kittanning	"	10,429			
	Natico	Liberty	7,218			
	Paco	"	7,208			
	Perryville	T-2 Tanker	10,400			
	Petersburg	"	10,457			
Panama Line	Ancon	Pass.-Cargo	10,021	90,460 cuft	202	N.Y.-Canal Zn.
	Cristobal	"	"	"	"	"
	Panama	"	"	"	"	"
Pan American Petroleum & Transport Co.	Pan-Maine	Tanker	7,236			Gulf-Atlantic Coast Ports
	Pan-Florida	"	"			"
	Pan-Maryland	"	7,700			"
	Pan-Rhode Island	"	7,742			"
	Pan-Pennsylvania	"	10,172			"
	Pan-New York	"	10,195			"
	Pan-Virginia	"	10,172			"
	Pan-Carolinas	"	10,195			"
Pan-Atlantic SS Corp.	Haiti Victory	Victory	7607	None	None	Coastwise
	Belgium Victory	"	7608	"	"	"
	Columbia Victory	"	7612	"	"	"
	Grange Victory	"	"	"	"	"
	Mandan Victory	"	7608	"	"	"
	Ethiopia Victory	"	7607	"	"	"
	Nampa Victory	"	7608	"	"	"
The Peninsular & Occidental SS Co.	Florida	Pass.-Cargo	4956	None	725	Caribbean
The Permanente SS Corp.	SS Permanente	VC2-AP3	7628	None	None	Trans of bulk cement, gypsum rock
	Silverbow	Victory				
	SS Diamond Cement	Steam-Frtr.	4005	"	"	Trans of lime rock.
Petroleum Nav. Co.	MV Penaco	Tanker	1223	None	None	Petroleum
	MV Dispatch	"	461	"	"	"
	MV Express	"	240	"	"	"
Pocahontas SS Co.	Isaac T. Mann	Collier	5266	None	None	Coastwise Coal
	Harry Bowen	"	3522	"	"	"
	Jonancy	"	3289	"	"	"
	Bylayi	"	3289	"	"	"
	Freeman	"	3350	"	"	"
	James Ellwood Jones	"	3372	"	"	"
Polarus SS Co., Inc.	Charles H. Marshall	Liberty	7176			Tramp
	William R. Lewis	"	7247			"
Ponchelet Marine Corp.	SS Otis E. Hall	"	7176			Foreign-France
	SS Clyde Austin Dunning	"	"			"
	SS Jeannette L. Routh	"	"			"
	SS Diana H. Ponchelet	"	"			"
	SS Ara J. Ponchelet	"	"			"
	SS John Blair	"	"			"
	SS Davis-Clinchfield 21	"	"			"
	Murray M. Blum	"	"			"
	Jacob A. Westervelt	"	"		12	"
Pope & Talbot Lines	P&T Seafarer	C3-S-A2	8011	55,000 gross cuft to be installed on 2 vessels	"	Pacific Coast U.S.-East Coast South America or domestic intercoastal
	P&T Navigator	"	"		"	
	P&T Explorer	"	"		"	
	P&T Forester	"	"		"	
	P&T Trader	"	"		"	
	P&T Pathfinder	"	"		"	
	St. Cloud Victory	VC2-AP3	7606		"	
Prudential SS Corp.	SS Eastern Guide	Freighter	6500	None	3	Portugal
	SS George Uhler	Liberty	7800	"	12	E. Medit'n
	SS Sarah Orne Jewett	"	7600	"	"	"
	SS Eastern Glen	"	4066	"	None	Coastwise
The Pure Oil Co.	Pure Oil	Tanker	9,942.67		None	Coastwise
	David D. Irwin	"	10,646.55	None	"	"
Richfield Oil Corp.	SS Agwiworld	Tank Steamer	6,771		None	Pac. Coastwise
	SS Charles S. Jones	"	8,111		"	"
	SS Sparrows Point	"	10,180		"	"
	SS Coxcomb Hill	"	10,448		"	"
Sabine Trans. Co., Inc.	SS L. L. Abshire	Tanker	6353			
	SS R. P. Smith	"	10296			
	SS C. B. Watson	"	7096			
	SS Henry M. Dawes	"	4710			
	SS Rawleigh Warner	"	5330			
	SS Signal Hill	"	10441			
	SS Munger T. Ball	"	8071			
	SS Walter Dumont	"	7281			
Schafer Bros. SS Lines	SS Margaret Schafer	Lbr. carrier	3460			Pac-Coastwise
Seas Shipping Co., Inc. (Robin Line)	Robin Doncaster	C2-S	7101	11,500	12	So. & E. Africa
	Robin Kettering	"	"	"	"	"
	Robin Lockeley	"	"	"	"	"
	Robin Sherwood	"	"	"	"	"
	Robin Tuxford	"	"	"	"	"
	Robin Wentley	"	"	"	"	"
	Robin Goodfellow	C3	7886	None	"	"
	Robin Gray	"	8004	"	"	"
	Robin Hood	"	7966	"	"	"
	Robin Kirk	"	8024	"	"	"
	Robin Moubray	"	8000	"	"	"
	Robin Trent	"	8000	"	"	"
Seatrain Lines, Inc.	Seatrain New York	Car-Carrier	8067	26 Reefer Cars		Coastwise (Atlantic and Gulf)
	Seatrain Havana	"	"	"		
	Seatrain Texas	"	8108	"		
	Seatrain New Jersey	"	"	"		
	Seatrain New Orleans	"	7636			Gulf-Cuba
Shepard SS Co.	Paul Revere	C3	7047	None	12	East Coast
	Minute Man	"	"	"	"	So. America
	Bostonian	"	"	"	None	"
	Bunker Hill	"	"	"	"	"
Sinclair Refining Co.	Albert E. Watts	Tanker	10907	None	None	Ocean
	Daniel Pierce	"	4887.69	"	"	"
	E. R. Kemp	"	"	"	"	"
	E. W. Sinclair	"	10907	"	"	"
	Flagship Sinco	"	10803.39	"	"	"
	George MacDonald	"	10164.84	"	"	"
	L. V. Stanford	"	7137.76	"	"	"
	Samuel L. Fuller	"	9894.48	"	"	"
	Sheldon Clark	"	10804	"	"	"
	Sinclair H. C.	"	7874.72	"	"	"
	Sinclair Opaline	"	"	"	"	"
	Sinclair Rubilene	"	"	"	"	"
	Sinclair Superflame	"	"	"	"	"
Socony Vacuum Oil Co., Inc.	Calusa	Tanker	10,173			Atlantic-Coastwise
	Colina	"	10,199			"
	Conastoga	"	10,199			"
	Magnolia	"	9,512			"
	Mobilfuel	"	10,222			"
	Mobilgas	"	9,925			"

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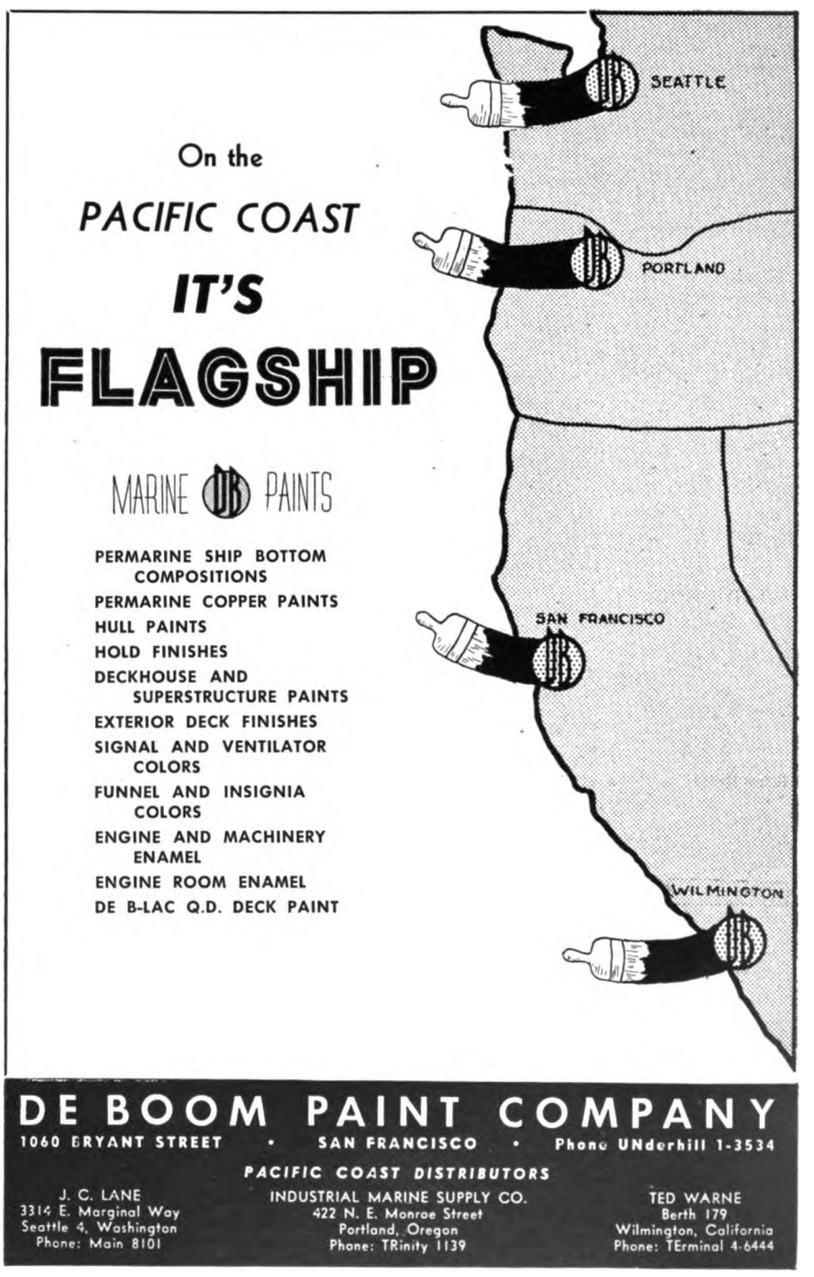
AMERICAN OWNED FLEETS *(Continued)*

Steamship Company	Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade
Socony Vacuum Oil Co., Inc. (continued)	Mobilight	Tanker	10,205			Atlantic-Coastwise
	Mobiloil	"	"			"
	Sachem	"	9,910			"
	Sacona	"	9,933			"
	Saconnet	"	"			"
	Samoset	"	9,910			"
	Satucket	"	9,933			"
	Saucon	"	"			"
	Shabonee	"	9,911			"
	Siwanoy	"	9,879			"
	Socony-Vacuum	"	9,512			"
	Syosset	"	9,933			"
	Tascalusa	"	9,890			"
	Tatarrax	"	"			"
	Mobilube	"	10,222			"
South Atlantic Steamship Line, Inc.	Southland	C2-S-AJ1	8258	None	12	Between U. S. Atlantic Ports (Hampton Roads to Key West) and U.K., Eire and Northern Continental Europe
	Southport	"	8145	"	"	
	Southstar	"	8277	"	"	
	Southwind	"	8198	"	"	
Southern Steamship Co.	Coastal Delegate	C1-M-AV1	3805	8,561	6	N.Y.-Cuba
	Cinch Knot	"	"	"	2	Boston-P. R.
Standard Fruit and SS Co.	Atlantida	Pass.-Ref.	4191	151127CF	48	U.S. Gulf and Cuba, Haiti, Honduras, Panama, Mex.
	Cefalu	"	5221	179700CF	60	
	Contessa	"	5512	"	"	
	Gatun	"	3361	129826CF	12	
	Granada	"	3331	"	"	
	St. Mary	Ref.-Cargo	2141	91022CF	None	
	Yoro	"	1697	125214CF	12	
	Teapa	Cargo	1184	"	None	
Standard of California	Alaska Standard	Tanker	1319			Alaska-Pacific
	Chevron	"	3150			"
	D. G. Scofield	"	8640			"
	F. S. Bryant	"	8489			"
	H. D. Collier	"	10246			"
	J. L. Hanna	"	"			"
	J. H. MacGaregill	"	"			"
	J. H. McEachern	"	6197			"
	J. H. Tuttle	"	11658			"
	M. E. Lombardi	"	5326			"
	R. G. Follis	"	8489			"
	R. C. Stoner	"	11658			"
	W. H. Berg	"	8298			"
	W. S. Miller	"	6984			"
	Fort Clatsop	"	10448			"
	Idaho Falls	"	"			Caribbean, N. Hatteras
Standard Oil Co. (N. J.)	A. C. Bedford	Tanker	9,485			Tanker
	Beacon	"	10,388			"
	Darthmouth	"	9,879			"
	Esso Allentown	"	10,449			"
	Esso Annapolis	"	9,888			"
	Esso Asheville	"	10,449			"
	Esso Aruba	"	8,773			"
	Esso Augusta	"	11,237			"
	Esso Baltimore	"	7,949			"
	Esso Bayonne	"	7,697			"
	Esso Baytown	"	7,992			"
	Esso Bayway	"	7,699			"
	Esso Bethlehem	"	10,113			"
	Esso Binghamton	"	10,173			"
	Esso Bridgeport	"	10,173			"
	Esso Burlington	"	10,173			"
	Esso Buffalo	"	11,349			"
	Esso Camden	"	10,297			"
	Esso Charleston	"	7,949			"
	Esso Charlotte	"	10,297			"
	Esso Chattanooga	"	10,297			"
	Esso Concord	"	7,699			"
	Esso Cumberland	"	10,297			"
	Esso Dover	"	8,880			"
	Esso Everett	"	10,449			"
	Esso Greensboro	"	10,195			"
	Esso Greenville	"	10,297			"
	Esso Hartford	"	9,887			"
	Esso Linden	"	10,296			"
	Esso Little Rock	"	11,237			"
	Esso Manhattan	"	10,173			"
	Esso Memphis	"	10,297			"
	Esso Montpelier	"	7,699			"
	Esso Nashville	"	7,943			"
	Esso New Haven	"	10,318			"
	Esso New Orleans	"	9,956			"
	Esso Norfolk	"	10,170			"
	Esso Parkersburg	"	10,318			"
	Esso Paterson	"	10,170			"
	Esso Philadelphia	"	11,236			"
	Esso Pittsburgh	"	11,236			"
	Esso Portland	"	10,318			"
	Esso Providence	"	9,060			"
	Esso Raleigh	"	9,956			"
	Esso Reading	"	10,297			"
	Esso Richmond	"	11,345			"
	Esso Roanoke	"	10,297			"
	Esso Rochester	"	11,345			"
	Esso Scranton	"	10,297			"
	Esso Springfield	"	10,297			"
	Esso Shreveport	"	10,195			"
	Esso Syracuse	"	11,363			"
	Esso Utica	"	10,297			"
	Esso Wheeling	"	10,173			"
	Esso Wilmington	"	10,170			"
	Esso Worcester	"	10,449			"
	Fred W. Wellor	"	9,485			"
	G. Harrison Smith	"	11,753			"
	John D. Archbold	"	12,591			"
	Paul H. Harwood	"	6,611			"
	W. S. Farish	"	11,787			"
	Wallace E. Pratt	"	7,992			"
States Marine Corp.	Cotton State	C2	6,103		12	
	Empire State	"	6,214		"	
	Garden State	"	6,103		"	
States Marine Corp. (continued)	Golden State	C2	6103		12	
	Magnolia State	"	"		"	
	Blue Grass State	Liberty	7247			South Africa, Far East and Europe
	Evergreen State	"	"		"	
	Hoosier State	"	7240			
	Keystone State	"	7210			
	Lone Star State	"	7176			
	Old Dominion State	"	7210			
	Palmetto State	"	7198			
	Peach Tree State	"	7176			
	Volunteer State	"	7216			
	Wolverine State	"	7176			
States Steamship Company	SS California	EC2	7216	None	None	Trans-Pacific
	SS Charles E. Dant	C2	8292	"	"	"
	SS Colorado	VC2	7606	"	"	"
	SS Washington	EC2	7212	"	"	"
	SS Wyoming	VC2	7606	"	"	"
Sudden & Christenson, Inc	George S. Boutwell	Liberty	7191	None	None	Trans-Pacific Charter
	Simon Benson	"	7176	"	"	"
Sword Line, Inc.	Western Sword	Steam		None	None	Coastwise
	Arizona Pine	C1-MT-BU1	3800	"	"	"
	California Redwood	"	"	"	"	"
	Oregon Fir	"	"	"	"	"
	Alfred J. Evans	Liberty	7176	"	"	Foreign
	Amer. Press	"	6164	"	12	Coastwise
	Benj. H. Bristow	"	7176	"	None	Foreign
	Capa Alava	C1-B	6164	"	12	Coastwise



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AMERICAN OWNED FLEETS *(Continued)*

Steamship Company	Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade
The Texas Company	SS Arizona	Tanker	5174		None	Petroleum
	SS Arkansas	"	6452		"	"
	SS Buena Vista	"	10198		"	"
	SS California	"	10388		"	"
	SS Cerro Gordo	"	10195		"	"
	SS Churubusco	"	"		"	"
	SS Colorado	"	9310		"	"
	SS Contreras	"	10195		"	"
	SS Delaware	"	9331		"	"
	MV Florida	"	8572		"	"
	SS Georgia	"	9319		"	"
	SS Indiana	"	9331		"	"
	SS Maine	"	3358		"	"
	SS Michigan	"	3805		"	"
	SS Montana	"	9319		"	"
	SS Nevada	"	6915		"	"
	MV Rhode Island	"	8580		"	"
	SS Roanoke	"	6425		"	"
	SS South Mountain	"	10296		"	"
	SS Vera Cruz	"	10198		"	"
	SS Williamsburg	"	10296		"	"
	SS Alabama	"	10296		"	"
	MV Cristobal	"	3262		"	"
	SS Illinois	"	10296		"	"
	SS Louisiana	"	10317		"	"
	SS New Jersey	"	10296		"	"
	SS North Carolina	"	10535		"	"
	SS South Carolina	"	10551		"	"
Tide Water Associated Oil Co. (Eastern Division)	SS Byron D. Benson	Steam Tank.	10,296	None	None	Crude Petroleum from U.S. Gulf Ports to New York
	SS David McKelvy	"	"	"	"	
	SS Samuel O. Brown	"	"	"	"	
	SS Wm. F. Humphrey	"	"	"	"	
	SS Robert E. Hopkins	"	"	"	"	
	SS Axtell J. Byles	"	9,059	"	"	
	SS Edward L. Shea	"	6,746	"	"	
Tide Water Associated Oil Co. (Western Division)	SS Associated	Tanker	8429			
	SS Frank G. Drum	"	7156.6			
	SS Mericos H. Whittier	"	6972			
	SS Solana	"	6702			
	SS Paul Shoup	"	6817			
	MS Tide Water	"	8886			
	MS Tide Water Associated	"	8906			
M & J Tracy, Inc.	SS Michael Tracy	Collier	6643	None	None	Coastwise
	SS Thomas Tracy	"	"	"	"	"
Trinidad Corporation	Caribbean	Tanker	10,169			
	Clarke's Wharf	"	10,296			
	Fort Mercer	"	10,266			
	Fruitvale Hills	"	10,385			
	La Brea Hills	"	10,441			
	Lyon's Creek	"	10,296			
	New Market	"	10,296			
	Redstone	"	10,296			
	Tillamook	"	10,448			
Sun Oil Co.	Atlantic Sun	Motor	11401			Gulf.-No. Hatteras
	Bidwell	"	6837			"
	Delaware Sun	Steam	8964			"
	Sabine Sun	Motor	11359			"
	MS Sun	"	9002			"
	Texas Sun	"	9968			"
	Pennsylvania Sun	"	11394			"
	Sunoil	T2	10296			"
	Dynafuel	T1	3100			Coastwise
	Mercury Sun	T-2	10296			Gulf.-No. Hatteras
	Ohio Sun	"	10195			"
	Michigan Sun	"	10172			"
	Maryland Sun	"	10296			"
	Louisiana Sun	"	10198			"
United Fruit SS Corp.	Cibao	Cargo	5075	197000	12	Bananas and general cargo
	Heredia	"	7067	311000	"	
	Hibueras	"	5075	197000	"	
	Metapan	"	7067	311000	"	
	Morazon	"	5075	197000	"	
	Parismina	"	7067	311000	"	
	Quisqueya	"	5075	197000	"	
	Santo Cerro	"	"	"	"	
	Sixaola	"	"	"	"	
	Tivives	"	"	"	"	
	Ulua	"	"	"	"	
	Yaque	"	"	"	"	
United Mail SS Co.	Antigua	Passenger	6983	176000	99	Passengers, bananas and general cargo
	Chiriqui	"	6964	180000	"	
	Comayagua	Cargo	7075	313000	12	
	Esparta	"	"	"	"	
	Fra Berlanga	"	"	"	"	
	Jamaica	Passenger	6968	180000	99	
	Junior	Cargo	7075	313000	12	
	Limon	"	"	"	"	
	Quirigua	Passenger	6983	176000	99	
	San Jose	Cargo	7075	313000	12	
	Talamanca	Passenger	6963	180000	99	
	Veragua	"	6983	176000	"	
U. S. Lines Co.	SS American Banker	Freighter	8258	None	12	Trans.-Atlantic
	SS American Clipper	"	8228	36,134	"	"
	SS American Farmer	"	8258	None	"	"
	SS American Flyer	"	6214	"	"	"
	SS American Forwarder	"	8228	36,134	"	"
	SS American Importer	"	8294	"	"	"
	SS American Leader	"	6103	None	"	"
	SS American Merchant	"	8228	36,134	"	"
	SS American Ranger	"	8258	None	"	"
	SS American Scout	"	8294	36,134	"	"
	SS American Shipper	"	8228	"	"	"
	SS American Traveler	"	8294	"	"	"
	SS American Veteran	"	6214	None	"	"
	SS Courser	"	8303	"	"	Far East
	SS Onward	"	"	"	"	Australia
	SS Pioneer Cove	"	6221	"	"	"
	SS Pioneer Glen	"	8294	30,441	"	"
	SS Pioneer Gem	"	"	"	"	FarE.-Australia
	SS Pioneer Star	"	8228	"	"	Australia
	SS Pioneer Wave	"	6214	None	"	Far East
	SS Rattler	"	8295	"	"	Trans.-Atlantic
	SS Red Jacket	"	"	"	"	"

Steamship Company	Name of Ship	Type	Gross Tonnage	Reefer Capacity	Passenger Capacity	Trade
U. S. Lines Co. (continued)	SS Resolute	Freighter	8303	None	12	Far East
	SS Stag Hound	"	8295	"	"	"
	SS Belle of the Sea	"	6214	"	"	Trans.-Atlantic
	SS Whirlwind	"	6214	"	"	"
	Amer. Manufacturer	"	8330	"	6	"
	American Miller	"	8321	"	"	"
	American Planter	"	8250	"	12	"
	American Producer	"	8228	"	"	"
	American Scientist	"	8339	"	"	"
	Pioneer Bay	"	8461	"	6	Far East
	Pioneer Sea	"	8432	"	"	"
	Pioneer Tide	"	8276	"	"	"
	Titan	"	8277	"	"	Trans.-Atlantic
	Pioneer Lake	"	8453	"	"	Far East
	Golden West	"	8279	"	"	Trans.-Atlantic
United States Petroleum Carriers, Inc.	Fort Bridger	Steam. Tan.	10,172			Foreign
	Camas Meadows	"	"			"
	Lake George	"	"			"
	Battle Rock	"	"			"
Union Oil Co. of California	A. C. Rubel	Tanker	8221			Oil Trade
	Lompoc	"	10448			"
	L. P. St. Clair	"	8066			"
	Oleum	"	10448			"
	Paul M. Gregg	"	8187			"
	Santa Paula	"	10296			"
	Victor H. Kelly	"				"
	Unoba	"	634			"
The Union Sulphur Co., Inc.	Herman Frasch	Liberty	7191	None	None	Sulphur-Lumber
	Union Sulphur	"	7176	"	"	"
	Sulphur Mines	"	"	"	"	"
	Herman F. Whiton	T2 Tanker	10448	"	"	Oil
	William A. M. Burden	"	"	"	"	"
Waterman SS Corp.	Afoundria	C2-S-E1	6181	None	12	From the U.S. No. Atlantic and Gulf to Northern Europe, United Kingdom and the Orient
	SS Governor Dixon	EC2-S-C1	7176	"	None	
	Andrew Jackson	C2-S-E1	6165	"	12	
	Antinous	"	"	"	"	
	Arizpa	"	"	"	"	
	Azalea City	"	"	"	"	
	Beauregard	"	"	"	"	"
	Bienville	"	"	"	"	"
	City of Alma	"	"	"	"	"
	Desoto	"	"	"	"	"
	Fairisle	"	"	"	"	"
	Fairland	"	"	"	"	"
	Fairport	"	"	"	"	"
	Gateway City	"	"	"	"	"
	SS Governor Bibb	EC2-S-C1	7176	"	None	"
	SS Governor O'Neal	"	7212	"	"	"
	SS Governor Houston	"	7180	"	"	"
	Hastings	C2-S-E1	6165	"	12	"
	Iberville	"	"	"	"	"
	Jean Lafitte	"	"	"	"	"
	SS Governor Kilby	EC2-S-C1	7197	"	None	"
	SS Governor Miller	"	7176	"	"	"
	SS Governor Comer	"	"	"	"	"
	John B. Waterman	C2-S-E1	6165	"	12	"
	SS Governor Graves	EC2-S-C1	7176	"	None	"
	Kyska	C2-S-E1	6165	"	12	"
	Lafayette	"	"	"	"	"
	La Salle	"	"	"	"	"
	Madaket	"	"	"	"	"
	Maiden Creek	"	"	"	"	"
	SS Governor Brandon	EC2-S-C1	7247	"	None	"
	Morning Light	C2-S-E1	6165	"	12	"
	Alawai	"	"	"	"	"
	Noonday	"	"	"	"	"
	SS Governor Sparks	EC2-S-C1	7177	"	None	"
	Ponce de Leon	C2-S-E1	6165	"	12	"
	Raphael Semmes	"	"	"	"	"
	Tola Topa	"	"	"	"	"
	Wacosta	"	"	"	"	"
	Warrior	"	"	"	"	"
	Yaka	"	"	"	"	"
	Hurricane	"	"	"	"	Puerto Rican trade
	Monarch of the Seas	"	"	"	"	"
	Wild Ranger	"	"	"	"	"
	Khedive	CVE type navy escort aircraft carriers presently out of commission, but will be reconverted to C3-S-A2 type cargo vessels.				
	Begum	"		"		"
	Trumpeter	"		"		"
	Premier	"		"		"
	Reaper	"		"		"
	Cherubim	C2-S-B1	6165	None	12	From U.S. No. Atlantic Gulf to Northern Europe, United Kingdom and the Orient
	Dashing Wave	"	"	"	"	
	Del Santos	C2-F	"	"	"	
	Golden City	C2-S-B1	"	"	"	
	Herald of the Morning	"	"	"	"	
	Hotspur	"	"	"	"	
	John Land	"	"	"	"	"
	Typhoon	"	"	"	"	"
	War Hawk	"	"	"	"	"
	Winged Arrow	"	"	"	"	"
	Young America	"	"	"	"	"
Wessel Duval & Co., Inc.	Thomas F. Baker	Liberty	7210	None	None	World-wide
West Coast Trans-Oceanic SS Line	Portland Trader	EC2-SC-1	7247	None	None	Tramp
	Oregon Trader	"	7210	"	"	"
	Columbia Trader	EC2-S-C1	7210	"	"	"
Weyerhaeuser SS Co.	F. E. Weyerhauser	Liberty	7176			Intercoastal
	F. S. Bell	"	"			"
	J. P. Weyerhaeuser	"	"			"
	H. H. Irvine	"	"			"
Wilmore SS Co., Inc.	Berwindglen	Collier	4411	6600	None	Coal trade Hampton Rds. Va. to New England Ports
	Berwindvale	"	6643	10500	"	

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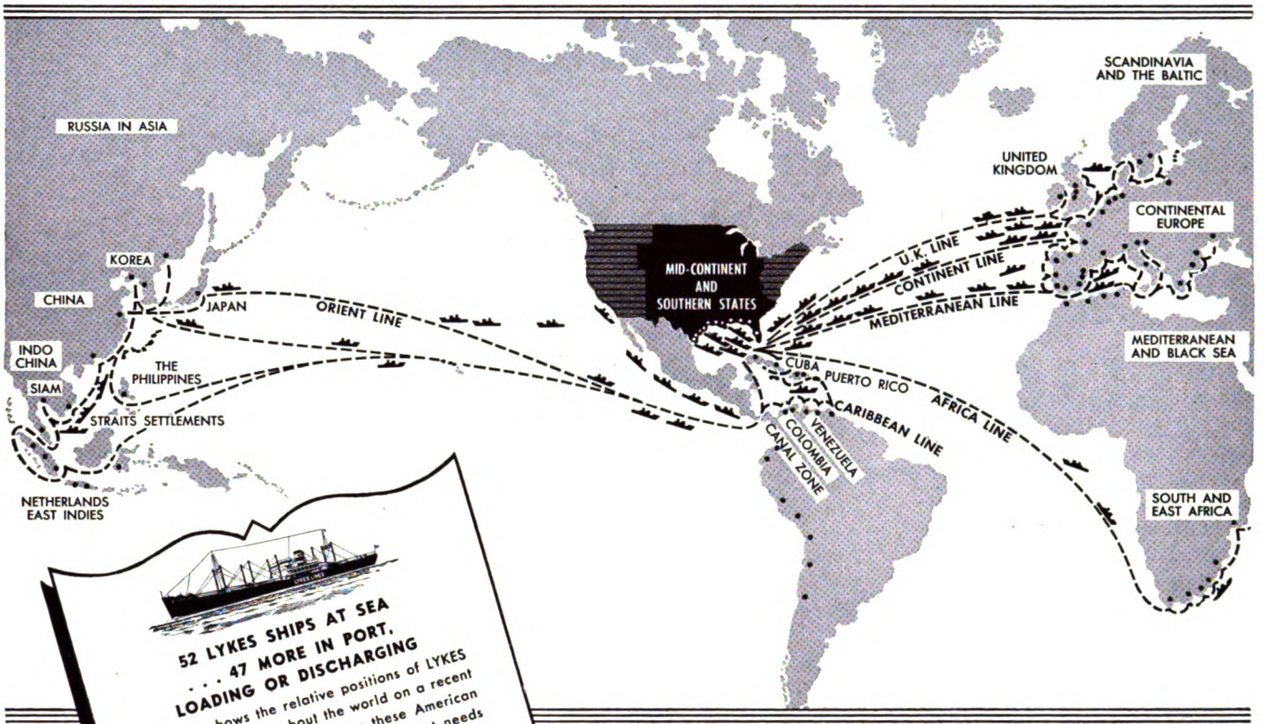
Today and Every Day

LYKES HAS A GREAT AMERICAN FLAG FLEET IN WORLD TRADE!



52 LYKES SHIPS AT SEA . . . 47 MORE IN PORT, LOADING OR DISCHARGING

This map shows the relative positions of LYKES cargo vessels throughout the world on a recent typical day. It illustrates how these American flag ships are serving the export-import needs of our Mid-Continent and Southern States on six major world trade routes emanating from United States Gulf ports.

Exports and imports of the productive Mid-Continent and Southern States follow a logical, economical route when they flow through the United States Gulf.

Around this natural *Gulf* Gateway to the world are the ports served by LYKES modern, C-type cargo vessels, *regularly scheduled* over globe-wide ocean trade lanes.

Generations of ocean shipping experience, modern equipment and methods, all contribute to the fast, dependable cargo facilities with which LYKES serves export-import shipping requirements.

American Flag Trade Routes

U. K. LINE—From New Orleans, U. S. West Gulf ports and Tampa, to England, Scotland, Ireland and Wales.

CONTINENT LINE—From New Orleans, Houston, Galveston, other U. S. West Gulf ports and Tampa, to France, Belgium, Holland, Germany, Denmark, Norway, Sweden, Finland and Poland.

MEDITERRANEAN LINE—From U. S. Gulf and South Atlantic ports to Mediterranean and Black Sea areas.

AFRICA LINE—From U. S. Gulf ports to South and East Africa, and Madagascar.

ORIENT LINE—From U. S. Gulf ports to Far East including The Philippines, China, Japan, Korea, Siam, Straits Settlements and Netherlands East Indies.

CARIBBEAN LINE—From U. S. West Gulf ports to Cuba, Haiti, Puerto Rico, Dominican Republic, Venezuela, East Coast of Colombia and Canal Zone.

LIMITED PASSENGER ACCOMMODATIONS

LYKES LINES

Lykes Bros. Steamship Co., Inc.

Offices at: NEW ORLEANS, HOUSTON, GALVESTON, NEW YORK, Baltimore, Beaumont, Chicago, Corpus Christi, Dallas, Gulfport, Kansas City, Lake Charles, Memphis, Milwaukee, Mobile, Port Arthur, St. Louis, Tampa, Washington.

OFFICES AND AGENTS IN PRINCIPAL WORLD PORTS

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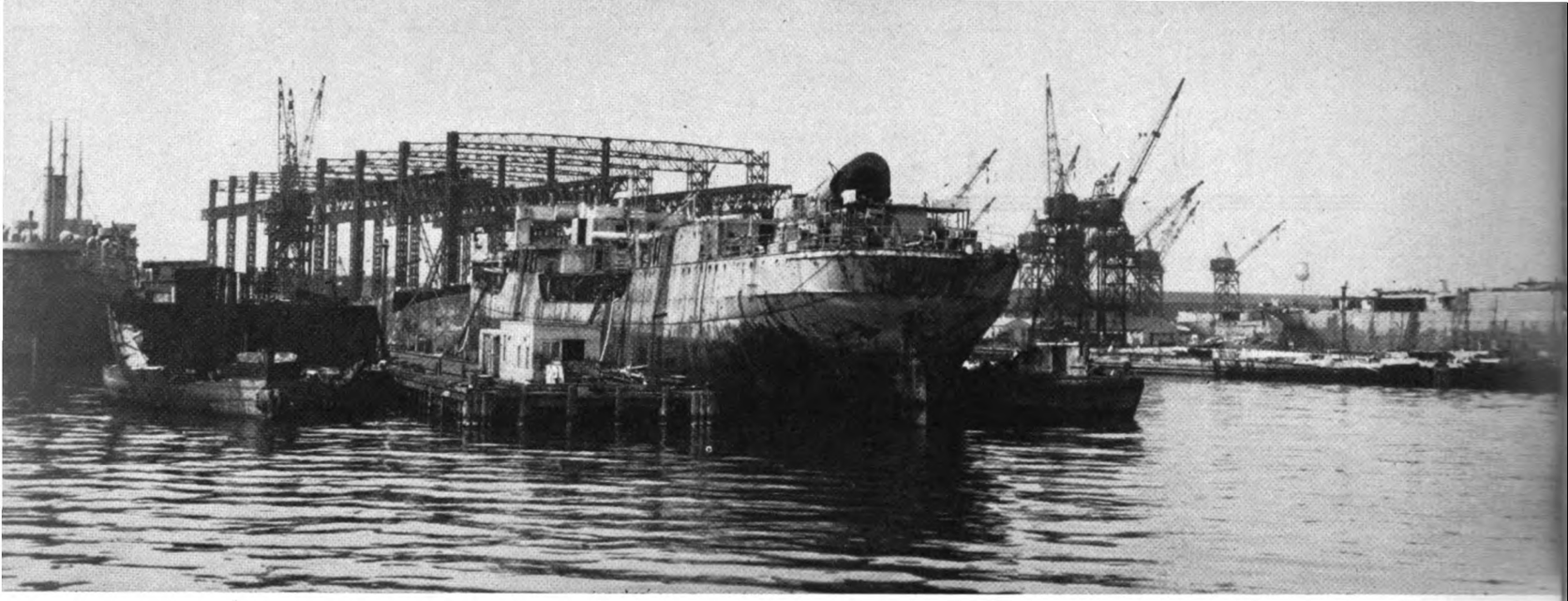

Shipbreaking is a booming business . . .

SHIP BREAKING—REVIVAL OF A BILLION DOLLAR INDUSTRY

A LOG survey of a revived and flourishing maritime industry.

By HAROLD M. WICK

The ship breaking industry, which flourished in the 1920's and early 1930's, has had a tremendous revival since the end of the war as a result of the sale for scrapping purposes of obsolete, war-damaged and surplus merchant ships and naval vessels by private American shipping interests, the United States Maritime Commission and the Navy Department. The total number sold for scrapping up to date, as tabulated on the following pages, is 354, representing 2,289,000 gross tons, 3,066,786 deadweight tons, with 1,497,665 horsepower of propelling machinery. These figures include only vessels of 1,000 gross tons and over and do not include the many miscellaneous small vessels and hundreds of naval landing craft which have also been scrapped.

Approximately 1,000,000 tons of steel scrap will be obtained from the hulls, decks and erections of these vessels, together with considerable quantities or other valuable metals, such as lead, brass and copper, and many items of salvageable machinery like engines, pumps, motors, winches, etc. A great variety of vessels have been sold, ranging from small short haul coastwise cargo ships and tankers, coastal bulk coal carriers, up to ocean going craft such as combination passenger and cargo liners, tankers, cargo vessels, refrigerated ships, Great Lakes ore carriers, the liner NORMANDIE, battleships, aircraft carriers, frigates constructed during the war, and submarines.

In the years following World War I hundreds of obsolete, damaged and surplus merchant and naval vessels were scrapped. One of the largest individual purchasers was the Ford Motor Company, which acquired 200 cargo vessels, mostly "Lakers", scrapped half of them at coastal ports, loaded this scrap into the remaining ships and towed these to their eventual point of final disposal. Approximately 1,000 ships were sold for scrap by the United States Shipping Board. Another large scrapping program in the years between the two wars involved the twenty-four capital ships which were scrapped under the naval limitations program after World War I. These ranged from obsolete ships to vessels in the actual process of construction.

Revival of An Industry

Ship breaking in the era prior to the outbreak of war in 1939 was a negligible factor in the United States as a means of procuring scrap for the steel mills. The revival of this industry has now spread into the large long established shipyards, such as the Newport News Shipbuilding and Dry Dock Company, the Sun Shipbuilding and Dry Dock Company, Moore Dry Dock Company, the Bethlehem subsidiary—Patapsco Scrap Corporation, and the war-built yards of the Kaiser Company. The accompanying table provides a summary of the wide spread activity in the United States in the scrapping of floating properties and indicates the considerable number of firms now engaged in this work and the extent of their participation.

The established shipbuilding yards with their full range of equipment are in most cases better fitted to handle the dismantling of ships as they already have fitting out docks, dry docks, cranes for the lifting of heavy machinery and large sections of steel, hydraulic shears, and railway sidings for the hauling of the scrap. Ship breaking as practiced by some of the firms listed is a rather sketchy affair with the rudest of equipment and with the ship berthed at a rented dock or on a mud flat. That it is a profitable venture in either case is not to be doubted.

Shortage of Scrap

The scrap shortage which has existed in the United States all during the war years and in the postwar years has been pronounced, and this has resulted, during 1947, in record prices for No. 1 steel scrap, ranging between $40 and $45 a ton. The continued high rate of steel production, and the prospects for a full operating rate during the next few years, will hold up the demand for steel scrap and the current high prices. The scrap derived from the dismantling of ships, however, only provides a small fraction of the tonnage required by the steel making industry.

Partial Payment for ERP

In an effort to discover possible sources of scrap materials, Government officials recently surveyed the situation in Germany and have come to the conclusion that there is on hand considerable more scrap than could be absorbed in German industry. The suggestion has been advanced by disinterested parties that this scrap, and scrap that could be gathered from the battlefields of Europe and other territories, might be assembled by Europeans as a small part payment for the huge relief shipments already made and still to be made under the Marshall European Recovery Program. Hundreds of ships are and will be involved for several years in this movement and the contention has been made that instead of these ships returning empty to the United States, as the great majority of them do, they could be partly loaded with scrap materials which will be of immense value to our steel mills and a means of saving iron ore. The thought has been expressed

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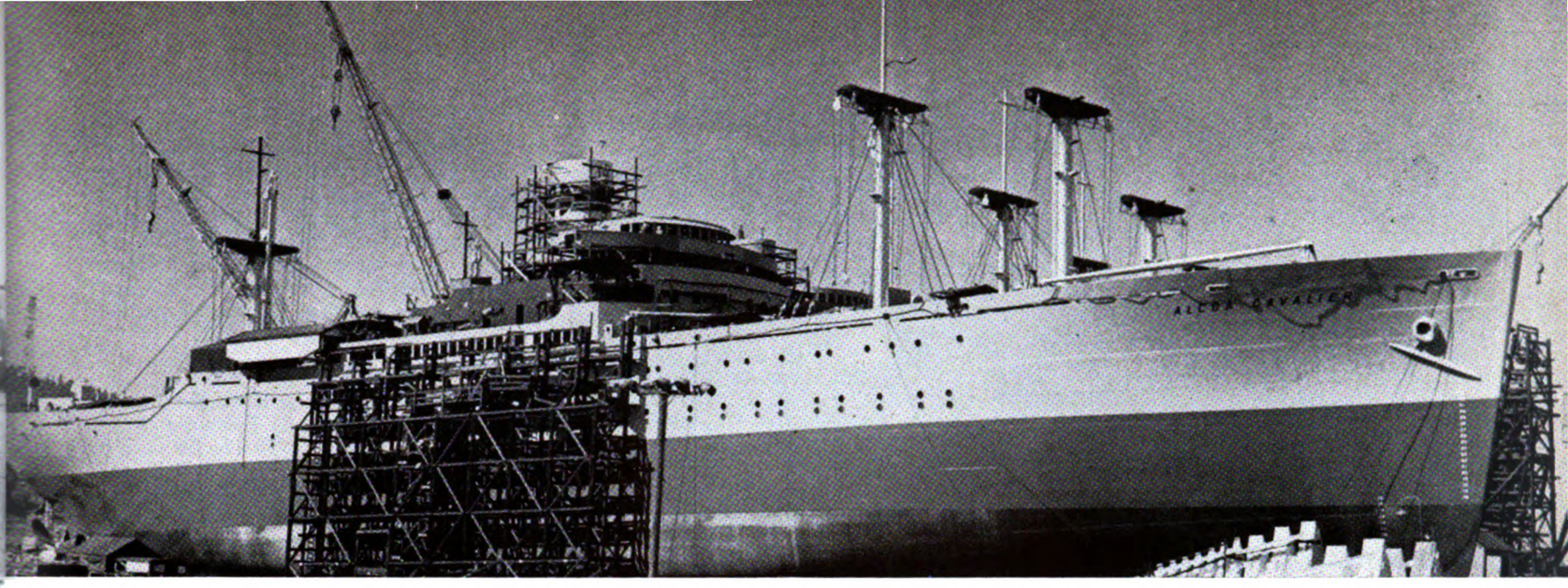

. . . but what about our *shipbuilding?*

that labor gangs for this purpose could be recruited from the displaced persons camps of Europe. In this manner the American taxpayer could get some small return on the tremendous investment of billions of dollars now being poured into Europe and Asia.

Dollars and Cents of Scrapping

It will be noted from the accompanying list that many famous and well known American flag vessels have been sold for dismantling and by now have reached the scrap pile. Included in the list are 99 tankers, 183 cargo and bulk carriers, and 36 combination passenger and cargo liners, 5 ferries, 4 battleships, 11 aircraft carriers, 13 destroyers, and 2 training ships. Individual prices paid for these vessels by the scrapping organization have varied considerably, depending upon the age of the vessel, the amount of scrap material, and the type of ship and propelling machinery. The steel scrap obtained from each vessel has averaged about 50 to 60 percent of the measured gross tonnage. As the price paid for steel scrap has advanced, the prices paid for these old vessels has increased. Two years ago large twenty-five year old tankers brought $10,000 to $20,000 each. Today they are worth $25,000 to $35,000 each. Similarly, large old cargo ships formerly went for $7,500 to $15,000 each; now they are selling for $18,000 to $30,000 each. Passenger ships with large deck erections are worth $50,000 to $60,000 each. The new, but damaged, T-2 turbo-electric drive tanker CAMPE VERDE brought $24,120. The cargo liner EL OCEANO of the Southern Pacific Steamship Company, constructed twenty years ago, sold for $21,137.

Average Age of Scrapped Ships

The largest group of ships disposed of at any one time were twenty-nine bulk cargo carriers which had existed on the Great Lakes for many years; in fact, the average age of these vessels was 45.4 years, some of them having been constructed more than fifty years ago. This fleet of bulk ore, grain and coal carriers totaled 125,929 gross tons and 196,750 deadweight tons, and was purchased by the By-Products Iron and Steel Corporation, Cleveland, Ohio, for $300,137, or an average price of $10,350 each. These vessels had been acquired by the Maritime Commission under a trade-in arrangement with Great Lakes operators who purchased the sixteen new bulk carriers constructed for the Commission by the Great Lakes Engineering Works and the American Ship Building Company during the war.

A study of the list of vessels sold for scrapping indicates that these old prewar-built ships averaged in gross and deadweight tonnage about 5,400 and 8,100 tons respectively. This is a much lower average tonnage than the new vessels which now comprise the privately owned American Merchant Marine consisting principally of C-1, C-2 and C-3 cargo ships and T-2 tankers. These new cargo ships average about 7,000 gross and 10,000 deadweight tons, and the tankers 10,000 gross and 16,500 deadweight tons, all with speeds averaging 25 percent greater than the prewar vessels.

Many additional over-age, damaged and surplus merchant vessels remain to be sold for scrapping, mainly from the Government owned fleet. Most of the old prewar-built vessels owned by private American shipping interests after the end of the war have already been sold to foreign interests, as with the great demand from abroad with the cessation of hostilities for tonnage of any kind, American owners were able to secure much higher prices than under the trade-in arrangement with the Maritime Commission for new vessels, averaging about $40 to $50 a deadweight ton.

Liberty Ships Headed for the Scrap Heap

The surplus tonnage over and above the still to be determined laid up reserve fleet will probably be large in number. On April 1st there were 1,445 vessels in the Government laid-up fleet sites, some few of which will be sold to private operators. With the new restrictions imposed by Congress in February prohibiting the further sale of merchant vessels to foreign interests, the total remaining under the control of the Maritime Commission will not vary greatly in the future, as practically all of the tankers and more valuable cargo ships have already been disposed of. In addition to these 1,445 laid up ships, which includes more than 700 Liberty ships, the Maritime Commission has out on bareboat charter to American operators approximately 900 vessels, mainly Liberty ships. The Commission still owns about 1,500 Liberty ships. Disposal of this huge fleet of one type, slow speed ships is a problem pending future solution. Continued use of hundreds of Liberty ships in hauling coal to Europe for the next four years, as contemplated under the Marshall plan, will ruin most of these vessels and their eventual disposition will be the scrap pile. In fact, the scrapping eventually of all but a few hundred Liberty ships, maintained in good condition for emergency use, would save the American taxpayer the $3,500 a year per ship lay-up cost and bring a scrap return of approximately $20,000 per vessel. In other words, if 1,000 Liberty ships were laid up for the next twenty years, the cost would be approximately $70,000,000, but if the ships are sold for scrap in the near future while scrap prices are high the return would be about $20,000,000.

The Army and Navy constructed during the war great numbers of vessels which are now surplus or outmoded, including combat vessels, auxiliary types such as the 50,000 landing ships, many small harbor tankers and cargo ships, tugs, oil and cargo barges, and special-purpose types. Most of these will be scrapped eventually and will provide a valuable source of scrap materials in the immediate years to come. The power plants of some few of the vessels condemned will be of use to isolated communities, the turbo-electric propelling machinery of the war-built T-2 tankers being suitable for employment as floating power plants on large construction projects and for community lighting and power.

Handling of Ship Disposal

Disposal of these old ships for scrapping has been handled in an orderly and businesslike manner by the Maritime Commission and private shipping interests under a competitive bidding system. In this way the scrap steel market is absorbing the tonnage as needed and

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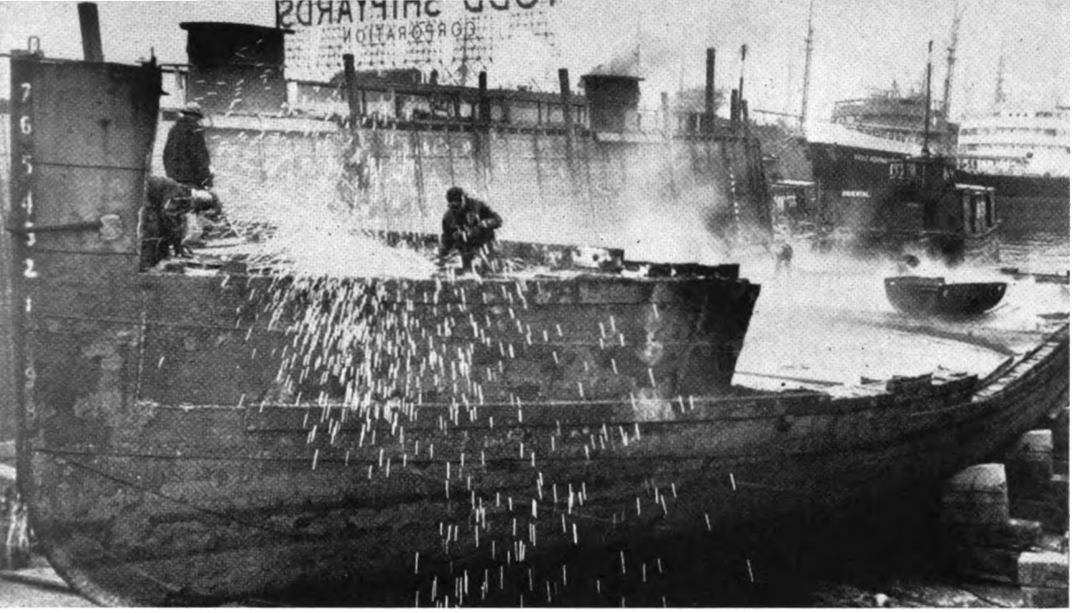

A thirty-five year old Tanker gets the torch at Todd's.

within their capacity to handle the vessels. In contrast is the tentative program developed and then abandoned by the Maritime Commission three years ago after considerable study and investigation. The tentative proposal then outlined by the Maritime Commission contemplated establishing a ship wrecking business in the United States. One demolition plant was to be organized on both the Atlantic and Pacific coasts, and one probably on the Gulf coast. Plans called for the dismantling of one ship each working day. Instead of producing revenue for the Government, it was found that the cost of producing scrap material by this organized method would be as much as $40 a ton.

Present terms under which these old vessels are being sold for scrapping by the Maritime Commission provides that the hull, engines, machinery and equipment shall be completely scrapped, dismembered, dismantled or destroyed within eighteen months after date of delivery of the vessel to the buyer, with the alternative provision in specific cases that only the hull is to be scrapped and the machinery can be salvaged. The Civilian Production Administration announced late in 1946 that the Government was willing to lease fourteen of its war-built shipyards to qualified ship breakers who would use the properties in breaking up the ships into scrap. Most of the yards offered are near the James River, Mobile Bay and San Francisco where the Government's laid-up fleets exist. However, little success attended this effort.

Breaking the Normandie

Largest of the merchant vessels to be scrapped to date was the USS LAFAYETTE, ex NORMANDIE, at one time the largest passenger liner in the world, completed in 1935, of 83,423 gross tons, with turbo-electric propelling machinery totaling 160,000 horsepower. On a high bid of $161,680, the vessel was awarded in October, 1946, to Lipsett, Inc., 80 Wall Street, New York City, who successfully concluded the scrapping operation late in 1947. Even with the entire superstructure missing, as a result of fire and sinking at a pier in New York, it was estimated that more than 40,000 tons of steel scrap would be salvaged from the hull. At that time scrap steel was bringing $16.17 per ton. Before the vessel had been entirely dismantled steel scrap had almost doubled in value. The price received by the Government for the vessel represented about $3.80 per ton of scrap, compared to an average of $3.59 per lightweight ton of ship received on the first 100 merchant vessels sold by the Commission for scrapping. The Lipsett firm is now engaged in scrapping the battleships NEW MEXICO, WYOMING, UTAH and OREGON.

Among the ships sold for scrapping are 9 of the twenty-three World War I built vessels which were converted at great expense by the Shipping Board in 1925-1929 to Diesel and Diesel-electric drive. This Diesel conversion program was of considerable value at the time in helping to establish the American Diesel engine building industry. Only two of these ships now remain afloat, one of these having been sold to foreign interests and the other to the Navy Department, while 12 were sunk during the war.

Familiar Ships Now Scrapped

In the listing will be noted the names of some of the famous coastwise cargo liners of the Southern Pacific Steamship Company, all of the names of which carried the prefix "El". All of this fleet has now either been sunk or sold for scrapping. Several of the vessels were thirty-six years old at the time of sale. The coastwise passenger vessel GOVERNOR COBB, of 1906 vintage and well known to New Englanders while in the service of the Eastern Steamship Lines, is another vessel which has succumbed to the march of time. Also, the Eastern Lines old cargo ship HERMAN WINTER built in 1886. The Central Vermont Transportation Company's cargo vessels NEW LONDON and NEW YORK, both built in 1909, and the VERMONT, completed in 1896, were sold for scrapping in February.

The prewar-built tankers sold for scrapping range from twenty-six to thirty-five years of age—well beyond the normal life of a tanker, their life having been extended due to the necessity of keeping this type of tonnage moving during the war years. Included in the list of owners of these vessels are such famous names as, Standard Oil Company

(Continued on Page 106)

Number, Tonnage and Horsepower of Vessels Purchased for Scrapping by Each Ship Wrecker

Name	Number	Gross Tons	Deadweight	Horsepower
American Iron & Metal Co., Emeryville, Cal.	10	53,008	80,926	23,150
American Shipbreakers, Inc., Wilmington, Del.	10	70,285	89,245	44,400
Basalt Rock Co., Napa, Cal.	6	39,216	53,057	21,100
H. H. Buncher Co., Pittsburgh, Pa.	12	77,836	112,920	33,670
Boston Metals Co., Baltimore, Md.	26	195,299	240,105	128,250
By-Products Iron & Steel Corp., Cleveland, Ohio	29	125,929	196,750	43,155
Dulien Steel Products, Seattle, Wash.	8	50,384	69,938	21,600
Eastern Ship Salvage Co., Tampa, Fla.	1	4,732	3,410	3,000
R. B. Eyerly, Salem, Oregon	1	1,938	1,000	2,800
Consolidated Builders, Inc., Vancouver, Wash.	3	32,213	33,500	24,000
M. D. Friedman Co., Portsmouth, Ohio	9	52,283	81,489	24,550
Franklin Ship Wrecking Co., Hillside, N. J.	7	35,535	55,400	16,050
Florida Pipe & Supply Co., Jacksonville, Fla.	6	35,775	55,451	19,650
Georgia Marine & Salvage Co., Brunswick, Ga.	4	15,214	22,365	8,650
William J. Hanley, Buffalo, N. Y.	1	3,695	6,000	1,200
Heglo Sales Corp., Hillside, N. J.	2	15,608	22,366	5,800
Heggie Corp.,	1	2,625	2,550	2,150
Walter W. Johnson Co., San Francisco, Cal.	8	43,334	48,279	33,350
Kaiser Company, Oakland, Cal.	19	132,918	173,179	70,750
Joseph L. Kammer, Cleveland, Ohio	3	20,979	33,169	12,340
M. S. Kaplan Co., Chicago, Ill.	2	12,061	19,675	5,500
Liberty Industrial & Salvage Co., Pittsburgh, Pa.	4	21,532	29,283	12,308
Lipsett, Inc., New York, N. Y.	5	168,423	116,993	268,477
Hyman-Michaels Co., Chicago, Ill.	1	1,961	3,200	3,500
Moore Dry Dock Co., Oakland, Cal.	5	10,548	9,100	10,875
National Metal & Steel Corp., Terminal Island, Cal.	5	34,917	49,706	13,540
New Market Steel Co., Perth Amboy, N. J.	3	15,169	24,646	9,590
Newport News S.B. & D.D. Co., Newport News, Va.	5	33,729	56,218	12,500
North American Smelting Co., Philadelphia, Pa.	2	12,440	18,807	6,800
Northern Metals Co., Philadelphia, Pa.	13	89,788	134,496	42,090
Jacques Pierot, Jr., & Sons, New York, N. Y.	3	8,419	9,000	6,000
Pinto Island Metals Co., Mobile, Ala.	11	63,600	95,044	25,900
Patapsco Scrap Corp., Baltimore, Md.	48	296,336	439,645	201,370
Port Iron & Supply Co., Port Arthur, Texas	1	7,247	10,467	2,500
Potomac Shipwrecking Co., Baltimore, Md.	2	7,028	10,661	3,500
Purdy Co.,	1	5,444	8,370	2,400
Southern Scrap Material Co., New Orleans, La.	2	13,336	20,730	5,500
Southern Shipwrecking Co., New Orleans, La.	3	19,478	28,370	8,000
Sun Shipbuilding & D.D. Co., Chester, Pa.	16	71,733	42,072	136,100
Schiavone & Bonomo, Jersey City, N. J.	1	1,535	3,000	960
Surmat Co., Philadelphia, Pa.	3	11,370	17,925	6,300
United Waste Co., Spartansburg, S. C.	1	7,191	10,920	2,500
A. F. Wagner Iron Works, Cleveland, O.	1	4,000	1,500	5,000
Arthur Wagner & A. J. Martell,	1	7,198	10,800	2,500
Zidell Ship Dismantling Co., Portland, Oregon	3	31,676	31,170	31,350
Foreign Interests	46	324,035	483,889	132,990
Totals	354	2,289,000	3,066,786	1,497,665

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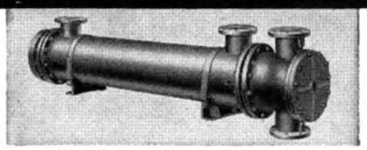
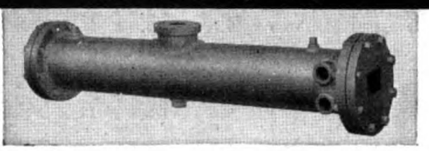


Types "CP" & "CF". Shell and tube. Coolers for lube oil, jacket water, air, gas, brine, drain, refrigerants, gear oil; condensers for vapor, ammonia, freon, etc.

Complete data in Bulletin 5322

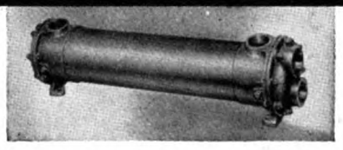
HEATERS, OIL



Type "O". Shell and tube. For preheating fuel oil and heating lubricating oil. Instantaneous. Many features for easy cleaning and inspection.

Complete data in Bulletin 3624-A

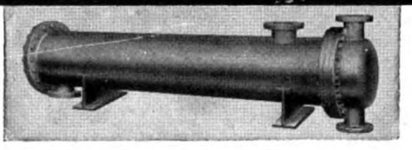
COOLERS (SMALLER SIZES)



Type "BCF". Shell and tube. For smaller Diesel and gas engines, reduction gears, thrust bearings, turbine oil, hydraulic presses.

Complete data in Bulletin 4922

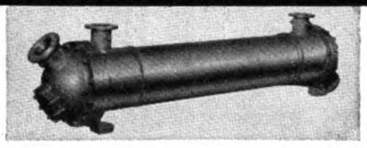
HEATERS, INSTANTANEOUS



Types "IS" and "IU". Shell and tube. Closed type feed water, service water, hot water converters, air under pressure, chemical solutions, condensate, gas and oil.

Complete data in Bulletin 3623

COOLERS (MARINE ONLY)



Type "BCP". Shell and tube. Cools lube oil and fresh water in all type ship's Diesels and air compressors; lube oil in turbines, battery and oil engines, reduction gears, hydraulic clutches, forced draft blowers, pumps.

Complete data in Bulletin 5222

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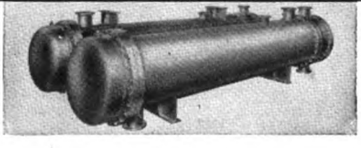

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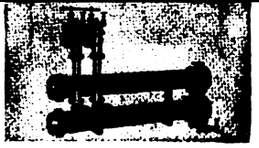

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VESSELS SOLD FOR SCRAPPING

BY PRIVATE AMERICAN SHIPPING INTERESTS,

Name of Vessel and Purchaser	Type	Year Built	G.T.	D.W.T	Propulsion	Former Owner
American Iron & Metal Co., Emeryville, Cal.						
R. D. Leonard	Tanker	1922	1796	2,641	T 750	Union Oil Co.
Huguenot	Tanker	1919	6964	11,250	R 2,600	Richfield Oil Corp.
W. M. Irish	Tanker	1918	7123	11,104	T 2,600	Atlantic Refining Co.
El Cedro	Cargo	1919	2512	3,500	R 1,350	James Griffiths & Sons
Fortune ex City of Elwood	Cargo	1921	6197	9,116	D 3,950	Maritime Commission
Makawao	Cargo	1921	3253	5,160	T 1,500	Matson Navigation Co.
West Cactus	Cargo	1919	5581	8,615	R 2,800	Pacific, Argentine, Brazil Line
West Keene	Cargo	1919	5600	8,615	R 2,800	Maritime Commission
District of Columbia	Tanker	1921	7162	11,225	T 2,800	Standard Oil Co., Cal.
Osmond	Tanker	1903	6820	9,700	R 2,000	Maritime Commission
American Shipbreakers, Inc., Wilmington, Del.						
Watertown	Tanker	1919	6372	9,900	R 2,600	Cities Service Oil Co.
Ann Skakel	Cargo	1920	4969	8,000	T 2,500	Clearwater S.S. Corp.
Patricia Skakel	Cargo	1920	4969	8,000	T 2,500	Clearwater S.S. Corp.
Capulin	Cargo	1920	4977	8,000	T 2,500	Maritime Commission
American Pilot	Cargo	1919	5524	7,850	T 2,500	Maritime Commission
Eastern Crown	Bulk	1920	5241	7,950	R 3,200	New England & Southern S.S. Co.
Hampden	Bulk	1914	4725	7,650	R 2,100	Coastwise Transp. Co.
Plymouth	Bulk	1915	5266	8,760	R 2,500	New England & Southern S.S. Co.
Harris ex President Grant	Passenger	1921	14,119	11,952	T12,000	American Mail Line
Zeilin ex President Jackson	Passenger	1921	14,123	11,183	T12,000	American Mail Line
Basalt Rock Co., Napa, Cal.						
Bunker Hill	Passenger	1907	4,779	3,000	R 7,000	New England S.S. Co.
Charles Kurz	Tanker	1918	5,731	9,022	T 3,000	Paco Tankers
Altair	Cargo	1919	7,068	8,800	T 2,500	Navy Department
Benjamin Ide Wheeler	Cargo	1942	7,176	10,711	R 2,500	Maritime Commission
Richmond	Tanker	1913	6,190	9,220	R 2,800	Standard Oil Co., Cal.
La Placentia	Tanker	1921	8,272	12,304	R 3,300	Union Oil Co.
H. H. Buncher Co., Pittsburgh, Pa.						
E. T. Bedford	Tanker	1921	9,563	15,655	D 3,000	Standard Oil Co., N.J.
Liebre	Tanker	1921	7,057	10,935	R 3,000	Socony-Vacuum Oil Co.
Standard Arrow	Tanker	1916	7,794	13,380	R 3,200	"
Pennsylvania	Tanker	1917	6,390	9,380	R 3,000	The Texas Co.
Caloria	Tanker	1906	4,095	6,860	R 1,800	Standard Nav. Corp.
Susan V. Luckenbach	Cargo	1918	7,430	11,020	R 2,800	Luckenbach S.S. Co.
West Cussetta	Cargo	1921	5,428	8,006	D 2,700	Maritime Commission
Capella	Cargo	1920	5,078	8,500	T 2,500	Navy Department
Jeff Davis	Cargo	1921	6,174	9,724	D 3,625	Maritime Commission
City of Montgomery	Passenger	1910	5,425	6,000	R 2,300	Ocean S.S. Co.
City of Savannah	Passenger	1907	5,397	5,960	R 2,300	"
Bridgeport	"	1901	8,005	7,500	R 3,445	Maritime Commission
Boston Metals Co., Baltimore, Md.						
Argon	Tanker	1920	6,952	10,790	R 2,800	Socony-Vacuum Oil Co.
Bessemer	"	1919	4,762	7,800	DE 1,800	Union Oil Co.
Point Breeze	"	1918	4,756	7,800	DE 1,800	"
Sharon	"	1919	4,762	7,800	DE 1,800	"
Ponca City	"	1920	7,051	10,900	R 2,800	Continental Oil Co.
F. Q. Barstow	"	1917	9,003	15,960	R 3,000	Standard Oil Co., N.J.
Kaweah (AO-15)	"	1919	7,253	10,250	R 2,800	U. S. Navy
Laramie (AO-16)	"	1920	7,253	10,250	R 2,800	"
Mattole (AO-17)	"	1922	7,252	10,250	R 2,800	"
Brazos (AO-4)	"	1919	7,449	11,000	R 5,200	"
Evelyn	Cargo	1912	3,140	5,030	R 1,200	A. H. Bull S.S. Co.
Seminole	"	1920	5,867	8,500	D 3,300	Maritime Commission
John C. Calhoun	"	1942	7,177	10,550	R 2,500	"
Gateway City	"	1920	5,432	9,075	T 3,000	Waterman S.S. Corp.
Yukon (AF-9)	"	1920	5,970	8,800	T 2,800	U. S. Navy
Alice H. Rice	"	1944	7,176	10,500	R 2,500	Maritime Commission
Edmund F. Dickens	"	1943	7,176	10,500	R 2,500	"
Ignace Paderewski	"	1943	7,176	10,500	R 2,500	"
James Rumsey	"	1942	7,176	10,500	R 2,500	"
J. Franklin Bell ex President McKinley	Passenger	1921	14,127	10,200	T12,000	American Mail Line
Henry T. Allen ex President Jefferson	"	1921	14,174	10,200	T12,000	"
U. S. Grant	"	1907	9,410	8,000	R 7,200	Maritime Commission
Santa Marta	"	1909	4,736	4,000	R 3,650	United Fruit Co.
Hunter Liggett ex Pan America	"	1922	13,712	10,200	T12,000	Munson Line
George S. Simonds ex H. F. Alexander	"	1915	8,357	3,753	T25,000	Pacific S.S. Lines
Relief	Hospital	1920	8,000	7,000	T 6,000	Navy Department
By-Products Iron & Steel Corp. Cleveland, Ohio						
Superior ex Richard J. Reiss	Bulk	1901	4,503	7,000	R 1,700	Reiss S S. Co.
Alex B. Uhrig	"	1893	3,257	4,900	R 1,000	"
Pentecost Mitchell	"	1903	4,044	6,800	R 1,480	Pittsburgh S.S. Co.
Clarence A. Black	"	1898	4,150	6,800	R 1,200	"
Zenith City	"	1895	3,581	5,700	R 1,100	"
Robert Fulton	"	1896	3,801	6,300	R 1,600	"
Queen City	"	1896	3,785	6,000	R 1,400	"
Rensselaer	"	1900	4,472	7,500	R 2,000	"
Herman C. Strom	"	1903	4,111	6,900	R 1,400	"
Cetus	"	1903	4,390	6,900	R 1,480	Interlake S.S. Co.
Corvus	"	1903	4,551	6,900	R 1,480	"
Cygnus	"	1903	4,725	6,900	R 1,500	"
Pegasus	"	1902	4,776	6,800	R 1,480	"
Saturn	"	1901	4,426	6,800	R 1,700	"
Taurus	"	1903	4,470	6,900	R 1,480	"
Vega	"	1906	4,382	7,000	R 1,450	"
Wilbert L. Smith	"	1903	4,319	6,300	R 1,480	Great Lakes S.S. Co.
George B. Leonard	"	1903	4,037	6,300	R 1,800	"
William Nottingham	"	1902	4,234	6,300	R 1,480	"
Monroe C. Smith	"	1903	4,281	6,300	R 1,300	"
J. Lyman Smith	"	1903	4,271	6,300	R 1,480	"
By-Products Iron & Steel Corp. (continued)						
Maritana	Bulk	1892	2,914	3,900	R 1,250	Buckeye S.S. Co.
Mariposa	"	1892	2,898	4,300	R 1,250	"
Alexander McDougall	"	1898	3,672	7,000	R 1,700	"
Johnstown	"	1905	6,524	10,350	R 1,600	Bethlehem Steel Corp.
Saucon	"	1906	6,996	11,391	R 1,875	"
Cornwall	"	1907	6,215	9,800	R 1,765	"
Kickapoo	"	1900	4,318	7,000	R 1,300	Wilson Transit Co.
A. W. Osborne	"	1897	3,826	6,200	R 1,425	"
Dulien Steel Products Seattle, Wash.						
Flomar	Cargo	1919	5,551	8,634	R 2,800	Calmar S.S. Corp.
Meanticut	"	1921	6,061	9,373	T 2,800	Lykes Bros. S.S. Co.
Mormacmar	"	1920	5,453	8,366	R 3,500	Maritime Commission
Gold Star	"	1920	5,066	6,000	T 2,500	Navy Department
Irvin L. Hunt	"	1918	6,958	9,600	T 2,500	War Department
Rigel	"	1918	7,052	8,800	T 2,500	Navy Department
Whitney	"	1918	7,052	8,800	T 2,500	"
Blackhawk	"	1943	7,191	10,365	R 2,500	Maritime Commission
Eastern Ship Salvage Co. Tampa, Fla.						
Cartago	Passenger	1908	4,732	3,410	R 3,000	United Fruit Co.
R. B. Eyerly, Salem, Oregon						
City of Victoria	Ferry	1893	1,938	1,000	R 2,800	Puget Sound Bridge and Dredge Co.
Consolidated Builders, Inc., Vancouver, Wash.						
Refuge ex President Madison	Passenger	1921	10,501	13,200	R 7,000	American President Lines
Leonard Wood ex Western World	Passenger	1922	13,712	11,300	T12,000	Munson Line
Bountiful	Hospital	1917	8,000	9,000	T 5,000	Navy Department
M. D. Friedman Co., Portsmouth, O.						
A. S. Hansen	Tanker	1915	5,188	7,550	R 2,700	Sabine Transp. Co.
Virginia	"	1917	6,390	9,830	R 3,000	National Bulk Carriers
Pan Georgia	"	1919	8,197	14,000	T 3,000	"
Chiloil	"	1920	5,228	7,925	R 2,700	"
Olney	"	1920	7,294	11,002	R 2,800	Charles Kurz & Co.
Chilbar	"	1919	5,030	8,192	R 2,700	Paco Tankers
Kewanee	"	1919	3,550	4,900	R 1,850	Republic Oil Refining Co.
Bayou Chico	Cargo	1920	5,401	8,690	T 3,000	Waterman S.S. Corp.
Narbo	"	1920	6,005	9,400	T 2,800	Lykes Bros. S.S. Co.
Franklin Ship Wrecking Co., Hillside, N. J.						
Edward L. Doheny	Tanker	1913	5,871	10,450	R 3,000	Standard Oil Co., N.J.
Lebec	"	1921	6,893	10,750	R 2,800	Socony-Vacuum Oil Co.
H. T. Harper	"	1921	3,803	4,950	D 1,650	Standard Oil Co., Cal.
George F. Downey	"	1921	2,702	4,250	R 1,500	Santa Cruz Oil Corp.
Will H. Point	Cargo	1919	5,795	8,650	T 2,500	Maritime Commission
Ludington	"	1920	8,266	12,850	T 3,000	War Department
Charles L. Wheeler, Jr.	"	1918	2,205	3,500	R 1,600	Pope and Talbot
Florida Pipe & Supply Co. Jacksonville, Fla.						
Idaho	Tanker	1919	6,418	10,000	R 3,000	The Texas Co.
City of Dalhart	Cargo	1921	5,878	9,185	D 3,000	Maritime Commission
Steel Exporter	"	1920	5,686	9,450	T 3,100	Isthmian S.S. Co.
Steel Trader	"	1920	5,686	9,450	T 3,100	"
Mormacrio	"	1919	5,940	8,366	R 3,500	Maritime Commission
Ward	"	1921	6,167	9,000	D 3,950	"
Georgia Marine & Salvage Co. Brunswick, Ga.						
Craigsmere	Bulk	1919	2,496	3,500	R 1,350	M. & J. Tracy, Inc.
Michael Tracy	"	1918	2,351	3,500	R 1,350	"
M. & J. Tracy	"	1917	2,364	3,500	R 1,350	"
Mexican	Cargo	1907	8,003	11,865	R 4,600	American-Hawaiian S.S. Co.
William J. Hanley, Buffalo, N. Y.						
S. B. Coolidge	Bulk	1897	3,695	6,000	R 1,200	Pioneer S.S. Co.
Heglo Sales Corp., Hillside, N. J.						
Marymar	Cargo	1919	6,847	10,277	T 2,500	Calmar S.S. Corp.
K. R. Kingsbury	Tanker	1921	8,761	12,089	R 3,300	Standard Oil Co., Cal.
Heggie Corp.,						
Herman Winter	Cargo	1886	2,625	2,550	R 2,150	Eastern S.S. Lines
Walter W. Johnson Co., San Francisco, Cal.						
Pastores	Passenger	1912	7,241	6,720	R 6,500	United Fruit Co.
Toloa	"	1918	6,494	4,260	R 6,000	"
Shamrock ex Agwileon ex Yucatan	"	1907	6,678	4,650	R 8,500	Agwi Lines
American Engineer ex Berkshire	"	1923	5,861	3,300	R 2,700	Merchants & Miners
Nevadan	Cargo	1912	4,734	10,085	R 3,600	American-Hawaiian S.S. Co.
Unicoi	"	1920	5,873	9,120	D 2,900	American Export Line
Domino	"	1919	3,170	5,100	R 1,650	American Sugar Transit Corp.
Mana	"	1920	3,283	5,044	T 1,500	Matson Navigation Co.
Kaiser Company Oakland, Cal.						
Abangarez	Passenger	1909	4,538	4,590	R 3,650	United Fruit Co.
City of Chattanooga	"	1923	5,861	3,300	R 2,900	Ocean S.S. Co.
President Roosevelt	"	1922	13,858	10,800	T12,000	United States Lines
President Van Buren	"	1920	10,533	13,000	R 7,000	American President Line
Samaritan ex Chaumont	"	1920	7,555	7,370	T 6,000	Navy Department
Tejon	Tanker	1920	7,034	10,835	R 2,800	Socony-Vacuum Oil Co

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SINCE THE END OF THE WAR

THE MARITIME COMMISSION AND THE NAVY

Name of Vessel and Purchaser	Type	Year Built	G.T.	D.W.T	Propulsion	Former Owner
Kaiser Company (cont'd)	Tanker					Socony-Vacuum Oil
Mojave	"	1921	6,900	10,725	R 2,800	Co.
Gargoyle	"	1921	7,002	10,630	R 3,500	"
Birkenhead	"	1921	6,960	10,698	R 3,500	"
Albert Hill	"	1917	7,115	11,060	R 2,400	Atlantic Refining Co.
Baldhill	"	1919	6,413	10,257	R 2,600	Paco Tankers
Cathwood	"	1920	7,072	10,749	R 2,800	Union Oil Co.
Deroche	"	1919	7,058	10,745	R 2,800	"
R. J. Hanna	"	1921	6,905	10,670	R 3,200	Standard Oil Co., Cal.
Cuyama	"	1920	6,500	9,700	R 2,800	Navy Department
Regulus	Cargo	1920	4,980	5,690	R 2,500	"
Sirius	"	1919	5,581	7,380	T 2,500	"
Antares	"	1919	5,501	6,500	T 2,500	"
West Kyska	"	1918	5,552	8,480	T 2,500	Waterman S.S. Co.
Joseph L. Kammer, Cleveland, O.						
Cities Service Fuel	Tanker	1916	5,343	8,700	T 2,400	Cities Service Oil Co.
H. M. Fredericksen	"	1914	5,188	8,050	R 2,700	Sabine Transportation Co.
Homestead	"	1945	10,448	16,419	TE 7,240	Maritime Commission
M. S. Kaplan Co., Chicago, Ill.						
American Arrow	Tanker	1920	8,327	13,325	R 3,200	Socony-Vacuum Oil Co.
Malang	Cargo	1920	3,734	6,350	R 2,300	C. D. Mallory Corp.
Liberty Industrial & Salvage Co., Pittsburgh, Pa.						
Gertrude Kellogg	Tanker	1920	5,159	7,899	R 2,800	Spencer Kellogg & Sons
New Orleans	Cargo	1920	6,172	9,184	D 4,000	American Export Lines
Artigas	"	1920	5,161	8,000	T 2,500	Maritime Commission
City of St. Louis	Passenger	1910	5,040	4,200	R 3,008	Ocean S.S. Co.
Lipsett, Inc., New York, N. Y.						
Normandie	Passenger	1935	83,423	13,288	TE 160,000	Maritime Commission
New Mexico	Battleship	1918	*30,000	†39,880	T 40,000	U. S. Navy
Wyoming	"	1911	*25,000	†31,000	T 28,000	"
Utah	"	1911	*20,000	†21,825	T 28,477	"
Oregon	"	1895	*10,000	†11,000	R 12,000	"
*-Estimated †-Load displacement.						
Hyman-Michaels Co., Chicago, Ill.						
Wilmette	Passenger	1903	1,961	3,200	R 3,500	Navy Department
Moore Dry Dock Co., Oakland, Cal.						
Alameda	Ferry	1913	2,302	2,000	R 2,500	Central Pacific Ry. Co.
Santa Clara	"	1915	2,282	2,000	R 2,500	"
Calistoga	"	1907	2,680	2,100	R 2,600	So. Pacific Golden Gate Co.
Hayward	"	1923	1,653	1,500	T 1,475	Ry. Equipment & Realty Co.
Tamalpais	"	1901	1,631	1,500	R 1,800	Northwestern Pacific R. R. Co.
National Metal & Steel Corp., Terminal Island, Cal.						
Anna Schafer	Cargo	1917	1,985	3,226	R 1,250	Schafer Bros. S.S. Lines
Vega	"	1919	5,562	7,480	T 2,500	Navy Department
Sepuiga	Tanker	1920	8,266	11,500	R 2,990	"
Tippecanoe	"	1920	8,267	11,500	T 2,800	"
F. H. Hillman	"	1921	10,837	16,000	R 4,000	Standard Oil Co., Cal.
New Market Steel Co., Perth Amboy, N. J.						
Camp Verde	Tanker	1945	10,296	16,286	TE 7,240	Maritime Commission
Dundas	Cargo	1923	1,901	3,100	R 1,000	"
Tintagel	"	1923	2,972	5,260	R 1,350	"
Newport News S. B. & D. D. Co., Newport News, Va.						
William G. Warden	Tanker	1917	9,114	15,955	R 3,000	Standard Oil Co., N. J
Thermo	"	1920	4,487	6,883	R 2,000	Paco Tankers
W.W. Bruce	"	1918	6,728	11,380	R 2,500	Continental S.S. Co.
Undaunted	"	1918	6,700	11,000	R 2,500	Maritime Commission
Stockhaus	"	1918	6,700	11,000	R 2,500	"
North American Smelting Co., Philadelphia, Pa.						
Charles H. Cramp	Cargo	1920	6,220	9,395	R 3,400	American South African Line
Henry S. Grove	"	1921	6,220	9,412	R 3,400	"
Northern Metals Co., Philadelphia, Pa.						
W. M. Burton	Tanker	1918	7,094	11,256	T 2,700	Atlantic Refining Co.
William Penn	"	1921	8,447	12,500	D 3,400	National Bulk Carriers
Christy Payne	"	1921	8,155	12,475	R 2,800	Standard Oil Co., N. J.
George W. Barnes	"	1918	6,214	9,800	R 2,600	"
Rapidan	"	1919	8,246	11,115	R 2,990	Navy Department
Andalien	Cargo	1918	5,728	8,600	T 2,500	Maritime Commission
Howard L. Gibson	"	1944	7,247	10,500	R 2,500	"
Achilles	Bulk	1915	9,660	13,820	R 7,200	American S.S. Co.
Glen White	"	1918	5,438	8,680	R 2,500	Koppers Coal Co.
Kopperston	"	1919	5,135	7,410	R 2,500	"
Newton	"	1911	5,001	8,270	R 2,700	"
Winding Gulf	"	1918	5,438	8,870	R 2,500	"
Virginian	Cargo	1903	7,985	11,200	R 5,200	American-Hawaiian S.S. Co.
Jacques Pierot, Jr., & Sons, New York, N. Y.						
New London	Cargo	1909	2,818	3,000	R 2,000	Central Vermont Trans. Co.
New York	"	1909	2,818	3,000	R 2,000	"
Vermont	"	1896	2,783	3,000	R 2,000	"
Pinto Island Metals Co., Mobile, Ala.						
Delphinus	Ref. cargo	1915	3,289	3,000	R 2,500	United Fruit Co.
James K. Polk	Cargo	1942	7,177	10 550	R 2,500	Maritime Commission

Name of Vessel and Purchaser	Type	Year Built	G.T.	D.W.T	Propulsion	Former Owner
Pinto Island Metals Co. (continued)						
Thomas Ruffin	Cargo	1942	7,191	10,920	R 2,500	Martime Commission
Lake Ellijoy	Bulk	1918	3,100	4,000	R 1,500	"
Tusitala	Training	1883	1,748	2,650	Sail	"
Pan Virginia	Tanker	1919	8,143	13,985	T 3,200	National Bulk Carriers
Olean	"	1919	7,223	11,160	R 2,800	Socony-Vacuum Oil Co.
La Purisima	"	1921	5,091	7,924	R 2,800	Union Oil Co.
Utacarbon	"	1920	6,878	10,749	R 2,800	Union Oil Co.
Dilworth	"	1920	7,045	10,100	R 2,800	Paco Tankers
J. C. Fitzsimmons	"	1918	6,715	10,006	R 2,500	Standard Oil Co., Cal.
Patapsco Scrap Corp., Baltimore, Md.						
Tustem	Tanker	1921	6,906	10,626	R 3,200	Atlantic Refining Co.
Bohemian Club	"	1921	6,906	11,022	R 3,200	"
J. C. Donnell	"	1918	9,783	16,260	R 3,000	"
Chester O. Swain	"	1921	8,145	12,450	R 2,800	Standard Oil Co., N. J
C. A. Canfield	"	1913	6,161	10,320	R 2,650	"
Herbert L. Pratt	"	1918	7,118	10,850	T 2,800	"
Thomas H. Wheeler	"	1921	6,950	10,450	R 3,200	"
S. B. Hunt	"	1919	6,840	11,205	R 2,600	"
R. G. Stewart	"	1917	9,229	14,650	R 3,200	"
Pan Carolina	"	1919	7,761	13,810	T 3,400	National Bulk Carriers
Beta	"	1917	5,665	9,100	T 2,500	Charles Kurs & Co.
Paco	"	1920	5,186	8,000	R 2,800	Paco Tankers, Inc.
Paulsboro	"	1916	6,698	10,647	R 3,000	Socony-Vacuum Oil Co.
Vacuum	"	1920	7,020	10,680	R 3,200	"
W. F. Burdell	"	1920	7,044	10,100	R 2,800	Sabine Transportation Co.
Shenandoah	"	1919	6,414	10,026	R 3,000	The Texas Co.
Sapelo (AO-11)	"	1920	8,246	12,600	R 2,990	U. S. Navy
El Mundo	Cargo	1910	6,008	6,680	R 5,500	Southern Pacific S.S. Co.
El Oceano	"	1925	6,767	7,900	T 5,500	"
El Oriente	"	1910	6,008	6,850	R 5,500	"
Delnorte	"	1919	4,982	7,750	T 3,140	Mississippi Shipping Co.
Delsud	"	1919	4,982	7,750	T 3,140	"
Nebraskan	"	1912	6,572	11,992	R 4,000	American-Hawaiian S.S. Co.
Mount Evans	"	1919	5,598	8,625	T 2,500	Maritime Commission
Oldham	"	1921	6,173	9,075	D 3,900	"
West Durfee	"	1918	5,522	8,590	T 2,500	"
Manasquan	"	1918	2,016	3,000	R 1,250	Mid-West Transportation Co.
Dynastic	"	1919	5,773	8,750	R 3,000	Waterman S.S. Corp.
Dunboyne	"	1920	3,515	5,620	T 2,000	C. D. Mallory Corp.
Sarazen	"	1920	5,401	8,572	T 3,000	Waterman S.S. Corp.
Boreas (AF-8)	"	1919	6,100	8,800	T 2,500	U. S. Navy
Everett	Bulk	1907	5,065	8,300	R 2,700	Mystic S.S. Co.
Melrose	"	1907	5,148	8,570	R 2,700	"
Berkshire	"	1920	4,621	6,700	R 2,650	Coastwise Transp. Corp.
Coastwise	"	1910	4,015	6,800	R 1,800	"
Charles L. O'Connor	"	1918	2,351	4,200	R 1,350	M. & J. Tracy, Inc.
Ulua	Pass. ref.	1917	6,494	4,250	R 6,000	United Fruit Co.
Calamares	"	1913	7,622	6,640	R 6,500	"
Carrillo	Cargo ref.	1911	4,593	4,000	R 3,650	"
Turrialla	"	1909	4,538	4,000	R 3,650	"
Battler	C-3 air. car.	194	8,000	12,500	T 9,350	U. S. Navy
Pursuer	"		8,000	12,500	T 9,350	"
Striker	"		8,000	12,500	T 9,350	"
Emperor	"		8,000	12,500	T 9,350	"
Empress	"		8,000	12,500	T 9,350	"
Ruler	"		8,000	12,500	T 9,350	"
John L. Clem ex Irwin	Passenger	1918	4,900	5,120	R 3,500	Merchants & Miners
U. S. S. Sumner	Destroyer	1940	*1,500	† 3,315	T15,000	U. S. Navy
*-Estimated †-Load displacement.						
Port Iron & Supply Co., Port Arthur, Texas						
Samuel L. Jeffery	Cargo	1945	7,247	10,467	R 2,500	Maritime Commission.
Potomac Shipwrecking Co., Baltimore, Md.						
Dannedaike	Tanker	1919	4,310	6,536	T 1,800	Paco Tankers
Cacique	Cargo	1918	2,718	4,125	R 1,700	Grace Line
Purdy Company,						
Glenpool	Tanker	1913	5,444	8,370	R 2,400	Standard Oil Co., N. J
Southern Scrap Material Co., New Orleans, La.						
John R. R. Hannay	Cargo	1919	6,209	9,680	T 2,500	Maritime Commission
Frederic R. Kellogg	Tanker	1917	7,127	11,050	R 3,000	Standard Oil Co., N. J.
Southern Shipwrecking Co., New Orleans, La.						
Hadnot	Tanker	1919	6,257	9,860	R 2,600	Cities Service Oil Co.
Cities Service Ohio	"	1921	7,245	10,910	D 2,600	"
Arctic-AF7	Cargo	1919	5,976	7,600	T 2,800	Navy Department
Sun S. B. & D. D. Co., Chester, Pa.						
Baldbutte	Tanker	1919	6,295	9,877	R 2,600	Paco Tankers
Governor Cobb	Passenger	1906	2,522	2,000	T 5,000	Eastern S.S. Lines
Ranger	Aircr. carrier	1934	*25,000	†14,500	T53,500	Navy Department
Casablanca	"	1943	10,100	3,575	R 9,000	"
Shreveport	frigate	1943	2,318	1,010	R 5,500	"
Hingham	"	1944	"	"	"	"
Van Buren	"	1943	"	"	"	"
Antiqua	"	"	"	"	"	"
Sarawak	"	1944	"	"	"	"
Seychelles	"	"	"	"	"	"
Perim	"	"	"	"	"	"
_____	"	"	"	"	"	"
_____	"	"	"	"	"	"
_____	"	"	"	"	"	"
_____	"	"	"	"	"	"
_____	"	"	"	"	"	"
*-Estimated †-Displacement						

(Continued on Page 106)

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VESSELS SOLD FOR SCRAPPING

Name of Vessel and Purchaser	Type	Year Built	G.T.	D.W.T	Propulsion	Former Owner
Schiavone & Bonomo, Jersey City, N. J.						
Bacol	Tanker	1912	1,535	3,000	D 960	Bouchard Transportation Co.
Surmat Company, Philadelphia, Pa.						
Arizpa	Cargo	1920	5,437	9,075	T 3,000	Waterman S.S. Co.
Falcon	"	1919	2,966	4,425	R 1,650	Grace Line
Lara	"	1919	2,967	4,425	R 1,650	"
United Waste Co., Spartansburg, S. C.						
John Banvard	Cargo	1943	7,191	10,920	R 2,500	Maritime Commission
A. F. Wagner Iron Works, Cleveland, Ohio						
Wolverine	Passenger	1912	4,000	1,500	R 5,000	Maritime Commission
Arthur Wagner & A. J. Martell,						
Charles S. Haight	Cargo	1944	7,198	10,800	R 2,500	Maritime Commission
Zidell Ship Dismantling Co. Portland, Oregon						
American Legion	Passenger	1921	13,736	11,170	T12,000	Munson Line
Maui	Passenger	1917	9,940	8,000	T10,000	Matson Navigation Co.
Long Island	C-3 air.car.	1942	8,000	12,000	T 9,350	U. S. Navy

Vessels Purchased by Foreign Ship Scrapping Interests

N. V. Holland Shipbreaking Yard U. K., Netherlands						
Nabob	C-3 air.car.	1943	8,000	12,000	T 9,350	U. S. Navy
Thane	"	"	"	"	"	"
J. R. Bundesen,						
Samoa	Cargo	1918	1,997	3,250	R 1,250	C. H. Wheeler Co.
Hugo Neu, Netherlands						
Moosehead	Training	1920	3,500	4,500	R 2,500	Maritime Commission
Gustave d'Auriol, Italy						
Joseph S. McDonagh	Cargo	1944	7,198	10,503	R 2,500	Maritime Commission
Estab. Van Heyghen Gebrs. N. V., Netherlands						
Robert J. Collier	Cargo	1944	7,176	10,920	R 2,500	Maritime Commission
Bucheimer & Staach, Netherlands						
Gasper De Portola	Cargo	1944	7,176	10,711	R 2,500	Maritime Commission
Venturi, Salvataggi Ricupere E. Imprese Maritime Socper Azoini, Italy						
Abbot L. Mills	Cargo	1943	7,176	10,480	R 2,500	Maritime Commission
Cassius Hudson	Cargo	1944	7,198	10,800	R 2,500	"
Cedar Mills	Tanker	1943	10,172	16,615	TE 7,240	"
Charles Henderson	Cargo	1943	7,176	10,366	R 2,500	"
Clark Mills	Cargo	1942	7,176	10,750	R 2,500	"
Daniel Webster	Cargo	1943	7,176	10,735	R 2,500	"
Eagle	Tanker	1917	6,003	10,000	R 2,800	"
Elihu Yale	Cargo	1942	7,176	10,844	R 2,500	"
Francis W. Pettygrove	Cargo	1943	7,176	10,439	R 2,500	"
George Cleeve	Cargo	1943	7,176	10,735	R 2,500	"
Gulfprince	Tanker	1921	6,560	10,600	R 3,000	"
Harrison Gray Otis	Cargo	1943	7,176	10,799	R 2,500	"
Henry Miller	Cargo	1943	7,207	10,578	R 2,500	"
Isaac Shelby	Cargo	1944	7,200	10,800	R 2,500	"
James Russell Lowell	Cargo	1942	7,176	10,500	R 2,500	"
James Guthrie	Cargo	1943	7,176	10,500	R 2,500	"
Jesse Billingsley	Cargo	1943	7,244	10,477	R 2,500	"
John Bascom	Cargo	1943	7,176	10,750	R 2,500	"
John H. Hammond	Cargo	1944	7,198	10,467	R 2,500	"
John Harvey	Cargo	1943	7,177	10,550	R 2,500	"
John L. Motley	Cargo	1943	7,176	10,920	R 2,500	"
Joseph Wheeler	Cargo	1942	7,176	10,750	R 2,500	"
Kenmar	Cargo	1919	6,844	10,295	T 2,500	Calmar S.S. Corp.
Nathan Hale	Cargo	1942	7,175	10,975	R 2,500	Maritime Commission
Nathanael Greene	Cargo	1942	7,176	10,550	R 2,500	"
Niels Poulson	Cargo	1944	7,198	10,800	R 2,500	"
Pat Harrison	Cargo	1943	7,191	10,353	R 2,500	"
Peter Skeene Ogden	Cargo	1942	7,176	10,844	R 2,500	"
Pierre Gibault	Cargo	1943	7,176	10,439	R 2,500	"
R. F. Peckham	Cargo	1943	7,176	10,500	R 2,500	"
Robert Erskine	Cargo	1943	7,176	10,920	R 2,500	"
Robert Rowan	Cargo	1943	7,176	10,550	R 2,500	"
Samuel Huntington	Cargo	1942	7,181	10,500	R 2,500	"
Samuel J. Tilden	Cargo	1942	7,176	10,844	R 2,500	"
Timothy Pickering	Cargo	1942	7,181	10,500	R 2,500	"
Thomas G. Masaryk	Cargo	1943	7,176	10,572	R 2,500	"
Virginia Dare	Cargo	1942	7,177	10,550	R 2,500	"
William D. Byron	Cargo	1944	7,210	10,920	R 2,500	"
William Hume	Cargo	1943	7,176	10,439	R 2,500	"

Notes—
R-Reciprocating; D-Diesel; T-Turbine; TE-Turbo Electric

SERVING THE ORIENT...

with fast, regular refrigerator and dry-cargo service

PACIFIC FAR EAST LINE'S modern fleet of dry-cargo and refrigerator vessels provides frequent, regularly scheduled sailings between California — Philippine Islands — North and South China — Hong Kong — Japan French Indo-China — Korea..... Deep Tank Facilities.

LIMITED PASSENGER ACCOMMODATIONS

Pacific Far East Line, Inc.
ROUTE OF THE BEARS

Shipbreaking

(Continued from Page 102)

(New Jersey), Socony-Vacuum Oil Company, Standard Oil Company of California, Union Oil Company of California, Cities Service Oil Company, Continental Oil Company, The Texas Company, Pure Oil Company, Atlantic Refining Company, National Bulk Carriers, Charles Kurz and Company.

Many of the bulk carriers engaged in the Atlantic coastwise coal trade before the war are being scrapped. Some of these are very old, dating back to 1907. Most were acquired by the Maritime Commission under a trade-in arrangement when selling the twenty-three Liberty type colliers. Prewar owners of these vessels were the Mystic Steamship Company, M. & J. Tracy, Inc., Coastwise Transportation Company.

A number of war-built Liberty cargo ships which were war-damaged have also been sold for scrap. Almost 3,500 tons of scrap is derived from these vessels. Some were torpedoed and limped back to a United States port, while others were badly damaged by grounding; a few were damaged by mine explosions and others by aircraft bombing.

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DISPOSITION OF THE USMC EMERGENCY TANKER FLEET

A LOG survey of where our war-built tankers have gone, who purchased them, their new names, and the flags they now fly.

The United States Maritime Commission has now allocated for sale to American and foreign interests all of the T2-SE-A1 type turbo-electric drive tankers constructed during the war years, with the exception of a few being retained for Government use and the A-2 and A-3 types which were built primarily for naval use with 10,000 shaft horsepower instead of 7,240 horsepower. While all of these tank vessels have been sold, the actual transferring of the vessels to their new owners is necessarily a slow process. In some cases the vessels were at sea when sold, the new owner taking the vessel "as is" upon arrival at a United States port. In other instances the vessels were laid up and considerable work had to be effected at a repair yard, including strapping of the hulls to relieve welding stresses, before the vessel could be turned over. Therefore, the accompanying tables and list of vessels sold include only those on which legal title transfer has been effected. In a few cases the Maritime Commission allocated a vessel several times to different ship owners before a purchase was agreed upon. These vessels have been sold under the authority of the Merchant Marine Act, 1936, as amended; the Merchant Ship Sales Act of 1946; and PDX-damaged and old vessel sales.

American interests have taken title to 216 of these tankers for operation under the American flag. A considerable number, also, have been acquired by American interests for operation under Panama flag. It will be noted that 63 tankers have been sold with permission to transfer to Panamanian flag; however, not all of these vessels are owned by American interests. The next largest group to go to a foreign flag was 51 for operation under the British flag. A total of 189 have gone to foreign flag. Permission to sell these vessels to foreign interests and governments was granted the Maritime Commission by the Joint Chiefs of Staff.

During the war years 1942-1945, inclusive, a total of 525 T2 tankers were constructed by four shipyards. Many of these vessels were completed in two to three months time from keel laying to delivery. Of the A1 type, 481 were completed, while 44 of the A2 and A3 type were constructed. It will be noted from the accompanying table that the Sun Shipbuilding and Dry Dock Company completed 198 tankers, these alone having a deadweight carrying capacity about equal to that of the entire prewar American flag tanker fleet. The Kaiser yard at Swan Island, Portland, Oregon, built 147 tankers; Alabama Dry Dock and Shipbuilding Company finished 102; while the Marinship Corporation constructed 78. The latter figure includes 44 of the higher power, higher speed A2 and A3 types.

The A1 type tankers have a carrying capacity of approximately 140,000 barrels, and average about 16,600 tons deadweight. They are propelled by double reduction geared steam turbines of 7,240 shaft horsepower, with two watertube boilers supplying steam. Length over-all is 523 feet 6 inches; beam 68 feet; depth 39 feet 3 inches; draft 30 feet 2 inches; speed 15 knots.

T2 tankers now comprise about two-thirds of the deadweight tonnage of the American flag tanker fleet. These vessels have 25 percent greater speed and 25 percent greater carrying capacity than the average tanker in the prewar American fleet, which before the war averaged seventeen years of age and was rapidly approaching the obsolescent stage.

As a result of the transfer since the end of the war to Panamanian flag of a number of privately owned tankers and Maritime Commission T2 tank ships, the Panama flag tanker fleet is now the fourth largest in the world, being exceeded in number and carrying capacity only by the fleets of the United States, United Kingdom, and Norway, in that order.

Despite the sinking of a great many tankers during the war years, the world supply of tankers has increased sharply over the prewar totals, due to the intensive emergency building program in the United States, Great Britain and Canada, and continuing in the postwar era. This was responsible, by the end of the war, for a 17 percent increase in number and a 31 percent and 35 percent increase in gross and deadweight tonnage, respectively, over the prewar world totals; in fact, the tank ships now afloat represent about 16 percent of the total number of merchant ships in existence and more than 23 percent of the total deadweight tonnage.

Number, Tonnage and Horsepower of Turbo-Electric Drive Type Tankers Constructed During the War for the Maritime Commission

Builder	T2-SE-A1 (a)				T2-SE-A2 and A3 (b)				Totals			
	No.	Gross tons	Dead-weight tons	S.H.P.	No.	Gross tons	Dead-weight tons	S.H.P.	No.	Gross tons	Dead-weight tons	S.H.P.
Alabama D. D. & S. B. Co. Mobile, Ala.	102	1,037,544	1,690,536	738,480	...	.....	.....	.....	102	1,037,544	1,690,536	738,480
Kaiser Company, Swan Island Yard Portland, Ore.	147	1,535,748	2,453,610	1,064,280	...	.....	.....	.....	147	1,535,748	2,453,610	1,064,280
Marinship Corporation Sausalito, Cal.	34	354,882	558,294	246,160	44	464,782	721,927	440,000	78	819,664	1,280,221	686,160
Sun Shipbuilding & D. D. Co. Chester, Pa.	198	2,029,863	3,247,661	1,433,520	...	.....	.....	.....	198	2,029,863	3,247,661	1,433,520
TOTALS	481	4,958,037	7,950,101	3,482,440	44	464,782	721,927	440,000	525	5,422,819	8,672,028	3,922,244
Constructed Each Year												
1942	22	224,021	365,500	159,280	...	.....	.....	.....	22	224,021	365,500	159,280
1943	128	1,315,392	2,124,498	926,720	5	51,507	82,238	50,000	133	1,366,899	2,206,736	976,720
1944	189	1,952,149	3,123,555	1,368,360	32	340,231	525,134	320,000	221	2,292,380	3,648,689	1,688,360
1945	142	1,466,475	2,336,548	1,028,080	7	73,044	114,555	70,000	149	1,539,519	2,451,103	1,098,080
Constructed on												
Atlantic Coast	198	2,029,863	3,247,661	1,433,520	...	.....	.....	.....	198	2,029,863	3,247,661	1,433,520
Gulf Coast	102	1,037,544	1,690,536	738,480	...	.....	.....	.....	102	1,037,544	1,690,536	738,408
Pacific Coast	181	1,890,630	3,011,904	1,310,440	44	464,782	721,927	440,000	225	2,355,412	3,733,831	1,750,440

(a) 7,240 horsepower maximum.
(b) 10,000 horsepower maximum.

SOURCE: The Bulletin, American Bureau of Shipping.

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T2-SE-A1 Type Turbo-Electric Drive Tankers Purchased from the Maritime Commission by American Interests for Operation Under the American Flag Under the Terms of the Merchant Ship Sales Act of 1946, or the Merchant Marine Act of 1936, or PDX-Damaged Sales, and Titles Transferred

Purchaser / New and Old Name of Ship	Year Built	Gross Tons	Deadweight Tons
American Eastern Corp.			
Queenston Heights	1943	10,448	16,738
American Pacific S.S. Co.			
Ampac California	1943	10,195	16,335
ex Lookout Mountain			
Ampac Washington	1943	10,448	16,551
ex Coquille			
American Trading & Production Corp.			
American Trader	1945	10,296	16,300
ex Marne			
Baltimore Trader	1945	10,296	16,290
ex Port Republic			
Crown Trader	1945	10,296	16,275
ex Carnifex Ferry			
American Viking Corp.			
Saint Christopher	1943	10,172	16,615
ex Skull Bar			
American Marine Corp.			
Battle Rock	1944	10,448	16,583
Camp Namanu	1944	10,448	16,461
Stony Point	1943	10,448	16,615
Atlantic Refining Co.			
Atlantic Dealer	1945	10,296	16,600
ex Honey Hill			
Atlantic Exporter	1945	10,296	16,600
ex Fort Casper			
Atlantic Mariner	1945	10,296	16,600
Atlantic Ranger	1945	10,249	16,600
Atlantic Refiner	1945	10,296	16,600
Atlantic Trader	1945	10,296	16,600
Barber Asphalt Co. & Trinidad Corp.			
Caribbean	1942	10,169	16,572
Fort Mercer	1945	10,246	16,532
New Market	1945	10,296	16,920
Clarke's Wharf	1945	10,296	16,284
Fruitvale Hills	1945	10,385	16,636
Redstone	1945	10,296	16,280
Tillamook	1944	10,448	16,558
Lyon's Creek	1944	10,296	16,295
Bernuth Lembcke Co.			
Tydol Bayonne	1944	10,296	16,285
ex Catham			
Fullerton Hills	1945	10,441	16,453
Coastal Oil Co.			
River Raisin	1943	10,448	16,738
The California Oil Co.			
Fort Mims	1945	10,172	16,697
Rock Landing	1945	10,172	16,615
Kettle Creek	1944	10,296	16,293
J. M. Carras, Inc.			
James Island	1944	10,317	16,286
Trinity	1943	10,172	16,615
ex Washita			
Cities Service Oil Co.			
Abiqua	1943	10,172	16,700
Council Grove	1945	10,172	16,700
French Creek	1944	10,296	16,800
Lone Jack	1944	10,297	16,500
Paoli	1944	10,296	16,260
Cantigny	1945	10,296	16,293
Bradford Island	1945	10,448	16,412
Salem Maritime	1945	10,448	16,435
Bent's Fort	1945	10,448	16,623
Fort Hoskins	1945	10,448	16,639
Government Camp	1945	10,448	16,435
Royal Oak	1945	10,296	16,282
Logan's Fort	1945	10,296	16,288
Colonial Navigation Co.			
Pueblo	1943	10,195	16,527
Conoco Marine Corp.			
Marine Leader	1945	10,172	16,765
ex Ponca City			
ex Black River			
Flanigan, Loveland, Inc.			
Pequot Hill	1943	10,448	16,738
Gulf Oil Corp.			
Gulfwell	1944	10,448	16,432
ex Fort William			
Gulfray	1944	10,296	16,255
ex Bushy Run			
Gulfstream	1943	10,195	16,615
ex Cross Keys			
Gulfmoon	1945	10,266	16,533
ex Fort Mifflin			
Gulflight	1943	10,195	16,538
ex Jalapa			
Gulfhorn	1945	10,296	16,276
ex Roxbury Hill			
Gulfdawn	1943	10,195	16,527
ex San Antonio			
Gulfshore	1945	10,296	16,292
ex Somme			
Gulftrade	1943	10,195	16,325
ex Spottsylvania			
Gulfhaven	1944	10,296	16,265
ex Spring Hill			
Gulfbrand	1944	10,296	16,280
ex Drewry's Bluff			
Gulfmills	1944	10,296	16,289
ex Musgroves Mills			
Gulfscout	1944	10,296	16,308
ex Fort Schuyler			
Gulfland	1944	10,296	16,600
ex Moor's Field			
Gulfpeak	1945	10,172	16,420
ex Golden Hill			
Gulfpass	1945	10,172	16,761
ex Raton Pass			
Gulfswamp	1944	10,172	16,448
ex Wahoo Swamp			
Gulfmeadows	1943	10,195	16,426
ex Great Meadows			
Gulfkey	1945	10,172	16,450
ex Texas City			
ex Kathio			
Gulfvictor	1943	10,195	16,330
ex Vicksburg			
Jenny Mfg. Co.			
Charles S. Jenny	1943	10,195	16,750
ex Seven Pines			
Independent Tankships, Inc.			
Fort Fetterman	1944	10,172	16,615
Birch Coulie	1943	10,172	16,615
Pine Ridge	1943	10,172	16,615
Red Canyon	1943	10,172	16,615
Crown Point	1943	10,195	16,427
Powder River	1943	10,172	16,615
Quemado Lake	1943	10,172	16,615
Keystone Shipping Co.			
Atlantic Traveler	1943	10,195	16,428
ex Murfreesboro			
Keystone Tank Ship Corp.			
Bennington	1942	10,172	16,700
Bunker Hill	1942	10,172	16,700
Cherry Valley	1942	10,172	16,700
Monmouth	1942	10,172	16,700
Ticonderoga	1942	10,172	16,800
Catawba Ford	1944	10,317	16,296
Charles Kurz & Co.			
Gaines Mill	1943	10,195	16,800
Mill Spring	1943	10,409	16,700
Perote	1943	10,195	16,425
Tullahoma	1944	10,296	16,261
Marine Transport Group			
Conoco Denver	1943	10,422	16,615
ex Fort Washington			
Ponca City	1943	10,448	16,738
ex Fort Henry			
National Bulk Carriers, Inc.			
Pan Georgia	1945	9,179	15,460
ex Gold Creek (shortened)			
Hat Creek	1943	10,172	16,615
Battle Mountain	1944	10,448	16,421
Joshua Tree	1944	10,448	16,738
Kaposia	1945	10,172	16,457
Trimbles Ford	1945	10,266	16,520
Whittier Hills	1945	10,441	16,443
Fort Charlotte	1944	10,448	16,443
Pendleton	1944	10,448	16,582
Evans Creek	1943	10,172	16,615
Wagon Box	1943	10,172	16,615
Five Forks	1943	10,230	16,304
Silver Peak	1944	10,448	16,600
Nautilus Shipping Corp.			
Captain John D. P.	1945	10,441	16,408
ex Potrero Hills			
North American Shipping & Trading Co.			
Monitor	1944	10,172	16,492
ex San Juan Hill			
Mormaid	1944	10,172	16,414
ex Little Butte			
Merrimac	1945	10,172	16,430
ex Phantom Hill			
Memory	1945	10,172	16,406
ex Pit River			
Jeanny	1945	10,296	16,293
ex Allatoona			
Seven Seas	1943	10,195	16,326
ex Harpers Ferry			
Pacific Tankers, Inc.			
Montebello Hills	1944	10,441	16,344
McKittrick Hills	1944	10,441	16,383
Paco Tankers, Inc.			
Chancellorsville	1943	10,195	16,700
Fredericksburg	1943	10,399	16,700
Kittanning	1943	10,195	16,800
Perryville	1943	10,401	16,700
Petersburg	1943	10,457	16,700
Pan American Petroleum & Transport Co.			
Pan New York	1943	10,195	16,514
ex Brandy Station			
Pan Pennsylvania	1945	10,172	16,514
ex Piqua			
Fort Pitt	1945	10,172	16,424
Pan Carolina	1943	10,195	16,441
ex Appomattox			
Petrol Tanker Industries, Inc.			
Bull Run	1943	10,195	16,415
Four Lakes	1944	10,172	16,615
The Cabins	1944	10,172	16,462
Richfield Oil Corp.			
Coxcomb Hill	1945	10,448	16,633
Sabine Transportation Co.			
R. P. Smith	1944	10,296	16,260
ex Edge Hill			
Signal Hills	1945	10,441	16,397
Ships, Inc.			
Winter Hill	1945	10,296	16,612
Archers Hope	1945	10,172	16,761
Socony Vacuum Oil Co.			
Calusa	1942	10,172	16,800
Colina	1943	10,198	16,800
Conastoga	1943	10,198	16,800
Southeastern Oil Co.			
Kern Hills	1945	10,441	16,409
Southern Trading Co.			
Atlantic Voyager	1944	10,172	16,615
ex Wyoming Valley			
Atlantic Shipper	1944	10,172	16,615
ex Platte Bridge			
Atlantic Transporter	1945	10,172	16,759
ex Ninety-Six			
Atlantic Producer	1944	10,172	16,455
ex Pocket Canyon			

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T2-SE-A1 Type Turbo-Electric Drive Tankers Purchased from the Maritime Commission by American Interests for Operation Under the American Flag Under the Terms of the Merchant Ship Sales Act of 1946, or the Merchant Marine Act of 1936, or PDX-Damaged Sales, and Titles Transferred

Purchaser / New and Old Name of Ship	Year Built	Gross Tons	Deadweight Tons
Standard Oil Co. of Cal.			
H. D. Collier	1945	10,246	16,500
J. H. MacGaregill	1945	10,246	16,500
J. L. Hanna	1945	10,246	16,500
Idaho Falls	1944	10,448	16,419
Fort Clatsop	1944	10,448	16,419
Standard Oil Co. of Indiana			
R. E. Wilson	1943	10,195	16,436
ex Monocacy			
Standard Oil Co. of New Jersey			
Esso Camden	1944	10,297	16,600
Esso Charlotte	1944	10,296	16,600
ex Malvern Hills			
Esso Cumberland	1944	10,296	16,600
ex Fort Cumberland			
***Esso Elizabeth**	1944	10,296	16,600
ex Frenchtown			
Esso Greenville	1944	10,296	16,600
ex Chadd's Ford			
***Esso Knoxville**	1944	10,296	16,600
ex Blackstock's Ford			
Esso Manhattan	1942	10,173	16,800
Esso Memphis	1944	10,297	16,600
Esso New Haven	1944	10,318	16,600
Esso Norfolk	1942	10,170	16,600
Esso Parkersburg	1944	10,317	16,600
ex Fort Cornwallis			
Esso Paterson	1942	10,170	16,700
ex Germantown			
Esso Portland	1944	10,318	16,600
***Esso Portsmouth**	1944	10,296	16,600
ex Sag Harbor			
Esso Reading	1944	10,296	16,600
ex Tampico			
Esso Roanoke	1944	10,297	16,600
Esso Scranton	1944	10,297	16,600
Esso Springfield	1944	10,297	16,600
Esso Utica	1944	10,297	16,600
Esso Wilmington	1942	10,170	16,700
Esso Greensboro	1943	10,195	16,530
ex Molino del Rey			
Esso Bridgeport	1945	10,172	16,446
ex Spirit Lake			
Esso Worcester	1945	10,448	16,518
ex Multnomah			
Esso Burlington	1943	10,172	16,615
ex Canyon Creek			
Esso Wheeling	1944	10,172	16,460
ex Bemis Heights			
Esso Ashville	1944	10,448	16,564
ex Newberg			
Esso Linden	1944	10,296	16,259
ex Prairie Grove			
Esso Allentown	1943	10,448	16,738
ex Bladensburg			
Esso Shreveport	1943	10,195	16,428
ex Front Royal			
Esso Everett	1944	10,448	16,425
ex Castle Pinckney			
*—Subsequently transferred to Panama flag.			
Esso Binghamton	1945	10,172	16,410
ex Fort Robinson			
Standard-Vacuum Oil Co.			
Stanvac Singapore	1944	10,448	16,415
ex Grand Mesa			
Stanvac Brisbane	1944	10,448	16,459
ex Chalmette			
Stanvac Hong Kong	1944	10,448	16,417
ex Black Hills			
Stanvac Bombay	1944	10,448	16,479
ex Elk Basin			
Stanvac Durban	1944	10,448	16,410
ex Glacier Park			
State Fuel Co.			
W. E. Downing	1945	10,441	16,530
ex Huntington Hills			
Sun Oil Co.			
Mercury Sun	1944	10,296	16,610
ex Point Pleasant			
Sun Oil	1944	10,296	16,607
ex Waxhaws			
Michigan Sun	1942	10,172	16,515
ex White Plains			
Ohio Sun	1943	10,195	16,439
ex Kenesaw Mountain			
Maryland Sun	1944	10,296	16,285
ex Cedar Mountain			
Louisiana Sun	1943	10,198	16,615
ex Palo Alto			
Sword Line			
Coalinga Hills	1944	10,441	16,364
Tanker Sag Harbor Corp.			
Petrolite	1944	10,296	16,300
ex Hanging Rock			
The Texas Co.			
Buena Vista	1943	10,198	16,800
Cerro Gordo	1943	10,195	16,700
Churubusco	1943	10,195	16,820
Contreras	1943	10,195	16,700
South Mountain	1944	10,296	16,600
Vera Cruz	1943	10,198	16,700
Williamsburg	1944	10,296	16,600
New Jersey	1944	10,296	16,600
ex Lake Erie			
Illinois	1944	10,296	16,800
ex San Pasqual			
North Carolina	1944	10,551	16,283
ex Briar Creek			
South Carolina	1944	10,551	16,283
ex Diamond Island			
Louisiana	1944	10,317	16,289
ex Kernstown			
Alabama	1944	10,296	16,262
ex Hubbardton			

Purchaser / New and Old Name of Ship	Year Built	Gross Tons	Deadweight Tons
Tide Water Associated Oil Co.			
Robert E. Hopkins	1945	10,296	16,800
ex Camp Charlotte			
Samuel Q. Brown	1944	10,296	16,800
ex Chesapeake Capes			
Byron D. Benson	1944	10,296	16,300
ex Glorietta			
David McKelvy	1944	10,296	16,300
ex Groveton			
William F. Humphrey	1944	10,296	16,600
ex Black Jack			
Frank Haskell	1944	10,296	16,285
ex Rich Mountain			
Union Oil Co. of Cal.			
Lompoc	1945	10,448	16,590
ex Jordan Valley			
Oleum	1945	10,448	16,423
ex Big Bend			
Santa Paula	1945	10,296	16,800
Union Sulphur Co.			
Herman F. Whiton	1943	10,448	16,738
ex Oregon Trail			
William A. M. Burden	1943	10,448	16,738
ex Brookfield			
U. S. Navigation Co.			
Fort Meigs	1943	10,448	16,738
U. S. Petroleum Carriers, Inc.			
Fort Bridger	1944	10,172	16,615
Lake George	1943	10,195	16,432
Camas Meadows	1943	10,172	16,615
Arickaree	1943	10,172	16,615

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DEPENDABILITY, SAFETY,

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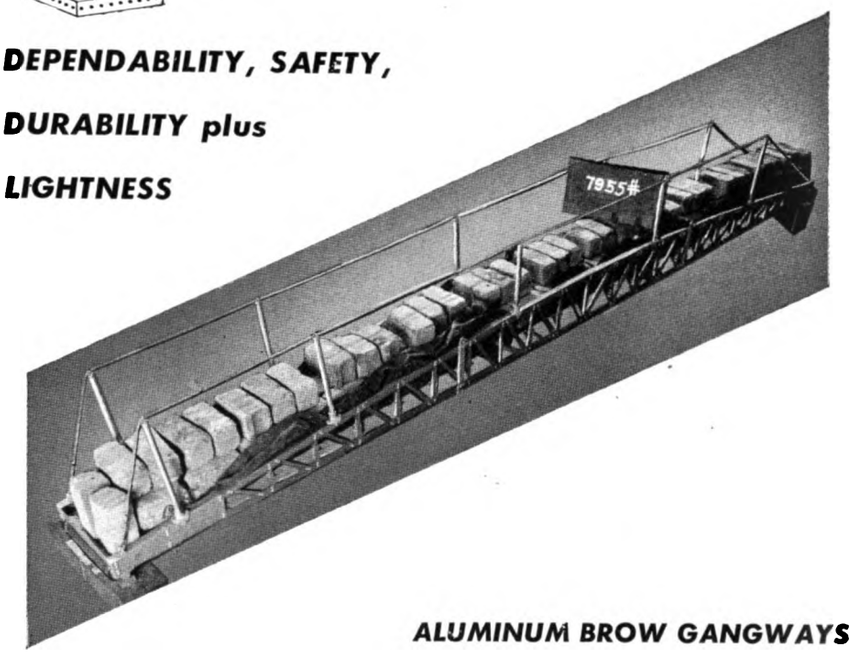

ALUMINUM BROW GANGWAYS

ALUMINUM FIXED TREAD ACCOMMODATION LADDERS

ALUMINUM FEATHERING TREAD ACCOMMODATION LADDERS

Information on request

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Number, Tonnage and Horsepower of T2-SE-A1 Type Turbo-Electric Drive Tankers Sold by the U. S. Maritime Commission and Titles Transferred, Arranged by Flag Under Which Operated

Flag	Number	Gross Tons	Deadweight Tons	Horsepower
United States	216	2,220,480	3,548,880	1,563,840
Belgium	1	10,296	16,287	7,240
Canada	8	82,983	131,201	57,920
France	17	175,808	280,223	123,080
Great Britain	51	527,230	836,828	369,240
Greece	7	72,874	115,569	50,680
Italy	17	174,989	220,910	123,080
Netherlands	3	31,178	49,157	21,720
Norway	17	175,537	279,887	123,080
Panama	63	649,535	1,037,497	456,120
Turkey	1	10,448	16,738	7,240
Union of South Africa	*2	20,896	33,353	14,480
Uruguay	2	20,592	32,586	14,480
Totals	405	4,172,846	6,599,116	2,932,200

T2-SE-A1 Type Turbo-Electric Drive Tankers Purchased from the Maritime Commission by American and Foreign Interests for Operation Under Foreign Flags Under the Terms of the Merchant Ship Sales Act of 1946 and Titles Transferred

Flag and Name of Ship	Year Built	Gross Tons	Deadweight Tons
Belgium			
Salmon Falls	1945	10,296	16,287
Canada			
Fort Donelson	1943	10,448	16,738
Paloma Hills	1945	10,441	16,421
Pinnacles	1944	10,448	16,408
Rincon Hills	1944	10,441	16,384
Blackwater	1944	10,296	16,287
Chrysler's Field	1944	10,296	16,255
Boundbrook	1944	10,317	16,285
Port Royal	1944	10,296	16,423
France			
Scott's Bluff	1944	10,448	16,456
Montezuma Castle	1944	10,448	16,428
Trailblazer	1944	10,448	16,455
The Dalles	1944	10,448	16,581
Ochoco	1944	10,448	16,577
Grand Teton	1944	10,448	16,421
Donner Lake	1944	10,448	16,456
Coulee Dam	1944	10,448	16,461
Table Rock	1943	10,448	16,554
Camp Defiance	1944	10,172	16,412
Sandy Lake	1945	10,172	16,412
Sedan	1945	10,296	16,285
Wood Lake	1944	10,172	16,615
Dobbytown	1945	10,172	16,429
Wilson's Creek	1944	10,172	16,615
White Bird Canyon	1944	10,172	16,488
Rainier	1944	10,448	16,578
Great Britain			
Rye Cove	1945	10,249	16,523
Smoky Hill	1944	10,448	16,441
Fort Matanzas	1944	10,448	16,410
Council Crest	1945	10,448	16,429
Fort Jupiter	1945	10,296	16,356
El Morro	1944	10,448	16,423
Orchard Knob	1945	10,296	16,348
Fort Cheswell	1945	10,296	16,349
Fort Frederica	1945	10,448	16,432
Capitol Reef	1944	10,448	16,431
Hovenweep	1944	10,448	16,424
Forbes Road	1944	10,448	16,448
Modoc Point	1945	10,448	16,425
Chaco Canyon	1944	10,448	16,423
Chatterton Hill	1944	10,172	16,426
Verendrye	1944	10,448	16,482
Mesa Verde	1944	10,448	16,441
Fort Raleigh	1945	10,448	16,436
Stones River	1945	10,448	16,435
Halls of Montezuma	1945	10,448	16,539
Bandelier	1944	10,448	16,441
White Sands	1945	10,448	16,423
Fort Winnebago	1944	10,448	16,448
Silver Creek	1945	10,448	16,526
Swan Island	1944	10,448	16,430
Tuolumne Meadows	1944	10,448	16,461
Chisholm Trail	1945	10,448	16,450
Bryce Canyon	1944	10,448	16,432
Laurel Hill	1944	10,448	16,449
Horseshoe	1944	10,172	16,459
Mobile Bay	1945	10,172	16,417
Red Bank	1944	10,172	16,437
Cottonwood Creek	1944	10,172	16,404
Fort Stevens	1944	10,172	16,422
Cahawba	1944	10,172	16,489
Cobble Hill	1945	10,296	16,287
Rogue River	1944	10,172	16,408
Crow Wing	1945	10,172	16,411
Palo Duro	1945	10,172	16,407
Ackia	1945	10,172	16,431
La Mesa	1944	10,296	16,257
Turkey Island	1944	10,296	16,285
Ridgefield	1944	10,296	16,288
Champion's Hill	1944	10,296	16,263
Santiago	1944	10,317	16,285
Turner's Cap	1945	10,296	16,363
Valverde	1944	10,296	16,258
Wauhatchie	1944	10,296	16,253
Mauvilla	1944	10,296	16,288
Sandy Creek	1944	10,296	16,282
Greece			
Fort Niagara	1943	10,193	16,532
Tumacacori	1944	10,448	16,466
Elk Hills	1944	10,441	16,285
Grande Ronde	1943	10,448	16,551
W. L. R. Emmet	1944	10,448	16,419
White Oak	1943	10,448	16,738
Klamath Falls	1943	10,448	16,578
Italy			
York	1943	10,448	16,600
Crater Lake	1944	10,448	16,546
Pulpit Rock	1944	10,448	16,430
Rosebud	1943	10,172	16,615
Manassas	1943	10,195	16,316
Corvallis	1943	10,448	16,738
Schenectady	1943	10,448	16,738
Ball's Bluff	1943	10,195	16,420
Shiloh	1943	10,195	16,426
Autossee	1944	10,172	16,615
Corinth	1943	10,195	16,431
Sharpsburg	1943	10,195	16,441

Flag and Name of Ship	Year Built	Gross Tons	Deadweight Tons
Italy (continued)			
Chickamauga	1943	10,195	16,422
Fairfax	1943	10,195	16,410
The Yakima	1944	10,172	16,409
Broad River	1943	10,448	16,738
Quebec	1943	10,420	16,615
Netherlands			
Inglewood Hills	1944	10,441	16,401
Wheeler Hills	1945	10,441	16,467
Hobkirk's Hill	1944	10,296	16,289
Norway			
Lundy's Lane	1943	10,448	16,783
Belridge Hills	1945	10,441	16,430
Fallen Timbers	1943	10,448	16,738
Santa Maria Hills	1945	10,441	16,413
Elwood Hills	1945	10,441	16,421
Mechanicsville	1943	10,448	16,738
Bear Paw	1944	10,172	16,431
Marin Hills	1945	10,385	16,739
Lost Hills	1944	10,441	16,293
The Cottonwoods	1944	10,172	16,444
Honningsvaag	1945	10,172	16,422
Hammerfest	1945	10,296	16,314
Kirkenes	1944	10,172	16,403
Finnmark	1945	10,296	16,280
Hegra	1944	10,296	16,307
Nordahl Grieg	1944	10,172	16,479
Karsten Wang	1944	10,296	16,297
Panama			
Chantilly	1943	10,195	16,341
Steens Mountain	1945	10,448	16,420
Wolf Creek	1944	10,448	16,474
Missionary Ridge	1943	10,195	16,338
Fort Massiac	1945	10,296	16,360
Barren Hill	1944	10,172	16,428
Heron's Bridge	1945	10,296	16,375
Grants Pass	1945	10,448	16,426
Champoeg	1943	10,448	16,738
Winchester	1943	10,195	16,440
Chapultepec	1943	10,195	16,527
Pawnee Rock	1945	10,172	16,408
Charlestown	1943	10,195	16,530
War Bonnet	1945	10,172	16,440
Snake River	1945	10,448	16,622
Opequon	1943	10,195	16,323
McClellan Creek	1943	10,172	16,500
Blue Licks	1945	10,172	16,433
Chicaca	1945	10,172	16,432
Fort Ridgely	1944	10,172	16,408
Moccasin Gap	1945	10,172	16,764
Wagon Mound	1945	10,172	16,430
Drapers Meadows	1945	10,296	16,286
Grand River	1944	10,172	16,401
Cabusto	1945	10,172	16,767
Meuse Argonne	1945	10,296	16,290
Camp Union	1945	10,296	16,295
Sideling Hill	1945	10,172	16,407
Saguaro	1945	10,448	16,443
Grays Harbor	1945	10,448	16,526
Chemawa	1945	10,448	16,448
New Echota	1945	10,448	16,413
Fort George	1943	10,448	16,738
Owyhee	1943	10,448	16,577
Umatilla	1943	10,448	16,738
Yamhill	1943	10,448	16,555
Gervais	1943	10,448	16,738
Fort Christina	1945	10,448	16,650
Quaker Hill	1944	10,172	16,398
Sunset	1945	10,448	16,420
Paulus Hook	1944	10,172	16,430
Carlsbad	1945	10,448	16,428
Beaver Dam	1944	10,172	16,615
Warrior Point	1944	10,448	16,420
Victory Loan	1945	10,448	16,631
Celilo	1944	10,448	16,548
White River	1944	10,172	16,615
Cannon Beach	1945	10,448	16,572
Fort Lane	1945	10,448	16,435
North Point	1944	10,172	16,432
Wallowa	1943	10,448	16,567
Fort Stanwix	1945	10,448	16,449
Sullys Hill	1945	10,448	16,447
Kings Canyon	1945	10,448	16,421
Apache Canyon	1944	10,172	16,615
Boonesborough	1945	10,172	16,421
Seneca Castle	1945	10,172	16,615
Pine Bluff	1944	10,296	16,225
Yellow Tavern	1944	10,296	16,253
Rum River	1944	10,296	16,258
Amiens	1945	10,296	16,282
Whitehorse	1944	10,317	16,298
Castle's Woods	1945	10,296	16,273
Turkey			
Fort McHenry	1943	10,448	16,738
Union of South Africa			
Egg Harbor	1943	10,448	16,615
Hadley	1948	10,448	16,738
Uruguay			
New Hope	1945	10,296	16,295
Trevilian	1945	10,296	16,291

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U. S. SHARE OF WORLD'S DRY CARGO LINER TRADE

Participation of U. S. flag vessels in dry cargo liner traffic on U. S. essential foreign trade routes.

With the resumption of regular ocean liner services on essential United States foreign trade routes, not only has the total volume of dry cargo traffic exceeded prewar levels but United States flag vessels have obtained a larger share of the carryings. From January to June 1947, liner traffic was at a rate about 50 percent greater than in 1938. Furthermore, during the first six months of 1947 U. S. flag vessels had 62 percent of the 20.5 million tons of liner carryings, a notable increase over the 37 percent of 26.8 million tons of liner carryings obtained in 12 months of 1938.

During the first six months of 1947 waterborne *dry cargo* foreign commerce of the United States, exclusive of trade between United States and Canada via the Great Lakes, amounted to 51.6 million tons. Of this total, 20.5 million tons has been calculated by the Research Division of the Maritime Commission to be commercial cargo carried by *liner* service vessels on the 32 essential U. S. foreign trade routes. The remaining 31.1 million tons consisted, for the most part, of bulk cargo such as coal, grain and ore which moved in nonliner (often called "tramp") vessels on several of the essential trade routes, and cargo carried on minor trade routes which have not been declared essential. In 1938, non-liner vessels carried 12.8 million tons, or about 30 percent of the total traffic. As the economies of war-ravaged overseas areas improve and production in foreign areas expands, an appreciable decrease in the total tonnage moved by non-liner vessels may be expected.

Determination of the volume of dry cargo traffic moving in liner vessels on essential U. S. foreign trade routes was made by the Trade Routes Branch of the Research Division from individual voyage reports submitted to the Maritime Commission by operators of U. S. and foreign flag vessels on all trade routes. It is this segment of total overseas waterborne commerce upon which attention is focused in this report and the accompanying summary tables.

U. S. Flag Line Operators Improve Position

Postwar operation of vessels in liner services has resulted not only in substantial increases over total tonnages carried prewar but also in an improved position of U. S. flag operators in competition with foreign flag line operators both on outward and inward movements. Of the Jan.-June 1947 traffic, U. S. flag vessels carried 59.4 percent of the exports and 67.5 percent of the imports. In 1938 U. S. flag vessels carried only 36.8 percent of the exports and 36.7 percent of the imports. The table below summarizes total liner traffic:

Foreign Trade Area Traffic Changes

Unsettled economic conditions in most foreign trade areas so far in the postwar period distort somewhat comparison with prewar movements of liner traffic. Consideration of liner traffic on a world trade area basis does, however, give a broad view of the importance of each area and the extent to which U. S. flag liner service has become established within those areas.

The Europe-Mediterranean area continued in the first half of 1947, as in 1938, to be the principal destination of outward cargo accounting for almost half of the total in both years. Significant changes have occurred in our trade with both the South America and the South & East Asia areas. In the former, the proportion of total exports increased from 8.1 percent to 15.9 percent; in the latter the proportion decreased from 20.8 percent to 14.4 percent.

Inbound traffic movement in the first half of 1947 developed a pattern decidedly different from that of 1938. Nearly three-fourths of the prewar tonnage was almost equally divided between the Europe-Mediterranean, Caribbean, and South & East Asia areas. During the first six months of 1947, however, the Caribbean area was clearly first in importance, having increased its proportion of the total from 24.9 percent to 40.9 percent; the South American area increased its share from 16.0 percent to 20.2 percent. Imports from the Europe-Mediterranean and South & East Asia areas were substantially lower.

United States flag operators during the first six months of 1947 increased substantially their proportion of the total traffic compared with 1938 in all but one foreign trade area—Africa—in which area U. S. flag lines carried 60.3 percent of the traffic during January-June 1947 and 62.7 percent in 1938. The improved position of U. S. flag operators can also be measured by the fact that in 1947 they carried more than 50 percent of the liner traffic in all but the Australasia area (in which area the U. S. flag share increased from 19.5 percent in 1938 to 27.4 percent in 1947), while in 1938 in only two areas—Caribbean and Africa—did U. S. flag carryings exceed 50 percent.

Share of Essential Trade Route Traffic in U. S. Flag Vessels

A greater proportion of total liner traffic (exports and imports) is being carried in U. S. flag vessels on more of the 32 trade routes than was the case prewar. In 1938 there were only 8 of the 32 essential U. S. foreign trade routes on which U. S. flag vessels obtained 50 percent or more of the liner traffic, but during the first six months of 1947 the U. S. flag share was 50 percent or greater on 23 of the routes. Cargo is moving in greater volume on all but a few routes, and on all except four routes (Nos. 2, 5, 9, 14), the share obtained by U. S. flag vessels during January-June 1947 was materially greater than during 1938. Comparison of the share of total cargo obtained by U. S. flag vessels on each of the 32 U. S. foreign trade routes in 1938 and in 1947 shows that of total liner traffic:

- More than 50 percent in both 1947 and 1938 was carried by U. S. flag vessels on 6 trade routes (Nos. 2, 3, 4, 11, 15-A, and 20).
- More than 50 percent in 1947 but less than 50 percent in 1938 was carried in U. S. flag vessels on 17 trade routes (Nos. 1, 7 & 8, 10, 12, 13, 15-B, 17, 18, 19, 21, 22, 23, 24, 25, 29, 30, and 31).
- Less than 50 percent in both 1947 and 1938 was carried by U. S. flag vessels on 7 trade routes (Nos. 5, 6, 16, 26-A, 26-B, 27, and 28).
- Less than 50 percent in 1947, but more than 50 percent in 1938 was carried in U. S. flag vessels on 2 trade routes (Nos. 9 and 14).

During the first six months of 1947, almost 80 percent as much liner traffic moved over essential U. S. foreign trade routes as in the 12 months of 1938, and U. S. flag vessels carried a much greater share of the tonnage (62.1 percent in 1947 compared with 36.8 percent in 1938. Exports during the first six months of 1947 almost equalled the tonnage moved during the entire calendar year 1938; imports from January to June 1947 were moving at only a slightly accelerated rate over the inbound carryings in 1938, due largely to unsettled economic conditions in the Europe-Mediterranean area and in the South & East Asia area.

Dry Cargo Liner Traffic	Exports and Imports		Exports		Imports	
	1938 (Jan.-Dec.)	1947 (Jan.-June)	1938 (Jan.-Dec.)	1947 (Jan.-June)	1938 (Jan.-Dec.)	1947 (Jan.-June)
	(In Thousands of Tons of 2240 Pounds)					
Total—All Routes	26,761	20,471	15,085	13,713	11,676	6,758
In U. S. Flag Vessels	9,828	12,707	5,546	8,146	4,282	4,561
Per Cent	36.8	62.1	36.8	59.4	36.7	67.5

Table No. 1 lists the essential U. S. foreign trade routes and shows United States and foreign coastal areas on each route.

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U. S. AND FOREIGN LINES OPERATING ON U. S. FOREIGN TRADE ROUTES

A—U. S. Flag Vessels Only; B—Foreign Flag Vessels Only; C—U. S. and Foreign Flag Vessels

Vessel Operation A	B	C	Name of Line and Nationality
			Trade Route No. 1
			U. S. Operators:
x			American Republics
x			Shepard
	x		Linea Sud Americana
	x		International Frt. Corp.
	x		Norton
		x	Sprague
			Foreign Operators:
	x		Booth (Br)
	x		Furness Prince (Br)
	x		Lamport & Holt (Br)
	x		Ivaran (Nor)
	x		NOPAL (Nor)
	x		Southern Cross (Nor)
	x		Wilhelmsen (Nor)
	x		Cia. Peruna de Vapores (Peru)
	x		Brodin (Swed)
	x		Lloyd Brasileiro (Brs)
	x		Dodero (Arg)
	x		Argentine State (Arg)
	x		Star Line of Panama (Pan)
	x		Torm (Dan)
			Trade Route No. 2
			U. S. Operators:
x			Grace
	x		West Coast
			Foreign Operators:
	x		Chilean (Chil)
	x		Cia. Peruna de Vapores (Peru)
	x		Coldemar (Col)
	x		Gran Colombiana (Col)
			Trade Route No. 3
			U. S. Operators:
x			Cuba Mail
			Foreign Operators:
	x		Mexico Line (Can)
			Trade Route No. 4
			U. S. Operators:
x			American Republics
x			American So. African
x			Bull Insular
x			Cuba Mail
x			Grace
x			Panama
x			P. & O.
x			Porto Rico
x			Seatrain
x			Standard Fruit
	x		West Coast
	x		Suwanee Fruit
	x		West Indies Fruit & S.S. Co.
		x	Alcoa
		x	Norgulf
		x	United Fruit
			Foreign Operators:
	x		Flota Mercante Del Estado (Arg)
	x		Furness Prince (Br)
	x		Lamport & Holt (Br)
	x		Furness Bermuda (Br)
	x		Chilean Line (Chil)
	x		Empresa Naviera (Cub)
	x		A. Garcia (Cub)
	x		Royal Netherlands (Neth)
	x		Chargeurs Reunis (Fr)
	x		French (Fr)
	x		NOPAL (Nor)
	x		Cia Trasatlantica (Sp)

Vessel Operation A	B	C	Name of Line and Nationality
			Trade Route No. 4 (Cont)
			Foreign Operators: (Cont)
	x		Coldemar (Col)
	x		Gran Columbiana (Col)
	x		MANZ (Can)
			Trade Route No. 5
x			
x			
x			U. S. Operators:
x			Anglo American
	x		Isthmian
	x		U. S. Lines
	x		
	x		Foreign Operators:
		x	Anchor (Br)
		x	Bristol City (Br)
		x	Cunard Brocklebank (Br)
			Cunard White Star (Br)
			Wilson Line (Br)
	x		Furness (Br)
	x		Head-Lord (Br)
	x		Maersk (Dan)
	x		Holland America (Neth)
	x		Gdynia America (Pol)
	x		Irish Shipping (Eire)
	x		
			Trade Route No. 6
	x		
	x		U. S. Operators:
	x		American Scantic
	x		U. S. Navigation
	x		
	x		Foreign Operators:
	x		East Asiatic (Dan)
	x		Maersk (Dan)
	x		Scandinavian-American (Dan)
	x		
	x		Norwegian-American (Nor)
	x		Wilhelmsen (Nor)
	x		Gdynia-America (Pol)
	x		Swedish-American (Sw)
	x		Swed. Amer. Mexico (Sw)
	x		Thorden (Sw)
	x		Iceland (Ice)
	x		
			Trade Route No. 7 & 8*
	x		
			U. S. Operators:
			Black Diamond
			U. S. Lines
	x		Cosmopolitan
			Isbrandtsen
			Foreign Operators:
			Belgian (Blg)
			Maersk (Dan)
			Holland America (Neth)
			French (Fr)
			Trade Route No. 9
			U. S. Operators:
			Anglo-American
			U. S. Lines
			Cosmopolitan
			Foreign Operators:
			Head-Lord (Br)
			Cunard White Star (Br)
			Maersk (Dan)
			French (Fr)
			Flomarcy (Port)
			Comp. Espanola de Nav.(Sp)
			Spanish (Sp)
			Asnar (Sp)
			Bilbaina (Sp)

*On January 15, 1948 the Maritime Commission directed that

Vessel Operation A	B	C	Name of Line and Nationality
			Trade Routes 7 and 8 be considered as separate essential routes.
	x		
	x		
	x		
			Trade Route No. 10
			U. S. Operators:
			American President (R-W)
			Prudential
			Waterman
x			Isthmian (also R-W)
x			American Mediterranean
x			Elwell
x			Levant
			Linea Sud Americana
			American Export
	x		States Hellenic
	x		Stevenson
	x		
	x		Foreign Operators:
	x		Amer. & Indian (Br)
	x		Cunard Brocklebank (Br)
	x		Silver (Kerr) (Br) (also R-W)
			Strick (Br)
			Java New York (Neth)
			Fabre (Fr)
x			French (Fr)
			M. A. Embiricos (Grk)
			Greek (Grk)
	x		Hellenic (Grk)
	x		Fern (Nor)
	x		Odfjell (Nor)
	x		Gdynia America (Pol)
			Colonial de Navegacao (Port)
			National de Navegacao (Port)
			Flomarcy (Port)
			Geralde (Port)
x			Soviet State Fleet (USSR)
x			Olympic (Sp)
			Espanola de N.M. (Sp)
			Spanish (Sp)
	x		Asnar (Sp)
			Bilbaina (Sp)
			Turkish State (Trk)
			Misr Navigation (Egypt)
			North Star (Pan)
x			Staubo (Nor)
x			Torm (Dan)
x			
			Trade Route No. 11
	x		U. S. Operators:
	x		Mobile Oceanic
	x		South Atlantic
	x		
	x		Foreign Operators:
	x		Wilhelmsen (Nor)
	x		Swed. Amer. Mex. (Sw)
			Trade Route No. 12
x			U. S. Operators:
x			American Hawaiian
			American Pioneer
			American President (R-W)
x			Isbrandtsen
			Isthmian (also R-W)
x			Lykes Orient
			Waterman
			Foreign Operators:
x			De La Rama (Phil)
			San Vincente (Phil)
			Amer. & Manchurian (Br) (R-W)
	x		
	x		Bank (Br) (R-W)
	x		Blue Funnel (Br) (also R-W)
	x		Prince (Br) (R-W)
	x		Silver (Br) (R-W)
	x		Barber (Br)

Vessel Operation A	B	C	Name of Line and Nationality
			Trade Route No. 12 (Cont)
			Maersk (Dan)
x			Fern (Nor)
x			Ivaran (Nor)
x			Swedish East Asiatic (Sw)
			Trade Route No. 13
	x		
			U. S. Operators:
	x		American Export
	x		Isthmian (also R-W)
	x		Lykes-Mediterranean
	x		States Marine
	x		
	x		Foreign Operators:
		x	Cia Nacional de Nav. (Port)
			French (Fr)
			States Hellenic (Gr)
			Asnar (Sp)
			Nervion (Sp)
x			Chargeurs Reunis (Fr)
	x		
	x		**Trade Route No. 14 (1)**
	x		
	x		U. S. Operators:
x			Amer. So. African
	x		Foreign Operators:
	x		Cia. Mar. Congalaise (Belg)
	x		Elder Dempster (Br)
	x		Chargeurs Reunis (Fr)
	x		Barber West African (Nor)
	x		
	x		**Trade Route No. 14 (2)**
	x		
	x		U. S. Operators:
	x		Delta
			Lykes Africa
			Foreign Operators:
			Chargeurs Reunis (Fr)
x			
x			**Trade Route No. 15-A**
x			
x			U. S. Operators:
	x		Amer. So. African
	x		Robin (Seas Shpg. Co.)
	x		States Marine
	x		
		x	Foreign Operators:
		x	Houston (Br)
			Prince (Br)
			Union Clan (Br)
	x		Elder Dempster (Br)
	x		American & African (Br)
	x		Funch Edye (Br)
	x		
	x		**Trade Route No. 15-B**
	x		
	x		U. S. Operators:
	x		Lykes Africa
	x		States Marine
	x		
	x		Foreign Operators:
	x		Silver Java Pacific (Br-Neth)
	x		
	x		**Trade Route No. 16**
	x		
	x		U. S. Operators:
	x		American Pioneer
	x		
	x		Foreign Operators:
	x		Amer. & Australian (Br)
	x		Bank (Br)
			Port (Br)
			MANZ (Can)
	x		

Vessel Operation A	B	C	Name of Line and Nationality
			Trade Route No. 17
			U. S. Operators:
	x		Isthmian (also R-W)
	x		American President (R-W)
	x		Waterman
	x		
	x		Foreign Operators:
			Amer. & Manchurian (Br) (R-W)
			Bank Line (Br) (R-W)
			Blue Funnel (Br) (also R-W)
x			Prince (Br) (R-W)
x			Silver Line (Br) (R-W)
x			Maersk (Dan)
x			Silver Java Pacific (Br-Neth)
x			Java New York (Neth)
x			
			Trade Route No. 18
	x		
	x		U. S. Operators:
	x		American Export
	x		American President (R-W)
	x		Isbrandtsen
	x		Isthmian (also R-W)
	x		States Marine
	x		
			Foreign Operators:
			American & Indian (Br)
			Bank (Br) (R-W)
			Blue Funnel (Br) (also R-W)
x			Cunard Brocklebank (Br)
x			Prince (Br) (R-W)
x			Silver (Br) (also R-W)
x			Strick (Br)
			Java New York (Neth)
			Hoegh (Nor)
	x		**Trade Route No. 19**
	x		
	x		U. S. Operators:
	x		Lykes Continent
	x		Lykes Mediterranean
	x		Lykes West Indies
	x		Mobile Oceanic
			Seatrain
			Trade Route No. 23
			U. S. Operators:
x			American President (R-W)
x			Coastwise
x			Grace
x			Pacific Argentine Brazil
x			Pacific Republics
x			Panama Pacific
x			United Fruit
x			Waterman
	x		Lloyd
	x		West Coast
			Foreign Operators:
	x		Amer. & Manchurian (Br) (R-W)
			Barber (Br)
	x		De La Rama (Phil)
	x		Donaldson (Br)
	x		East Asiatic (Dan)
	x		Fred Olsen (Nor)
	x		Fruit Express (Nor)
	x		Furness (Br)
	x		Holland America (Neth)
	x		Independence (Pan)
	x		Interocean (Nor)
	x		Johnson (Swed)
	x		Knutsen (Nor)
	x		Maersk (Dan)
	x		Royal Mail (Br)
	x		Swed. E. Asiatic (Swed)
	x		Westfal Larsen (Nor)

Vessel Operation A	B	C	Name of Line and Nationality
			Trade Route No. 20 (Cont)
			Foreign Operators:
			Brasil (Arg)
			Dodero (Arg)
			Argentine State (Arg)
			Lloyd Brasileiro (Brs)
			Northern Pan. Amer. (Nor)
			Trade Route No. 21
			U. S. Operators:
			States Marine
			Isthmian
			Lykes—Continent
			Lykes—U. K.
			Mobile Oceanic
			South Atlantic
			Foreign Operators:
			French (Fr)
			Harrison (Br)
			Holland-America (Neth)
			Nervion (Sp)
			Ropner (Br)
			Swed. Amer. Mex. (Swed)
			Wilhelmsen (Nor)
			Trade Route No. 22
			U. S. Operators:
			Waterman
			American Hawaiian
			Isthmian (also R-W
			Lykes Orient
			Foreign Operators:
			Bank (Br) (R-W)
			Fern (Nor)
			Ivaran (Nor)
			Nonsuco (Phil)
			Prince Silver (Br) (R-W)
			San Vincente (Phil)
			De La Rama (Phil)
			Trade Route No. 23
			U. S. Operators:
			American President (R-W)
			Coastwise
			Grace
			Pacific Argentine Brazil
			Pacific Republics
			Panama Pacific
			United Fruit
			Waterman
			Lloyd
			West Coast
			Foreign Operators:
			Amer. & Manchurian (Br) (R-W)
			Barber (Br)
			De La Rama (Phil)
			Donaldson (Br)
			East Asiatic (Dan)
			Fred Olsen (Nor)
			Fruit Express (Nor)
			Furness (Br)
			Holland America (Neth)
			Independence (Pan)
			Interocean (Nor)
			Johnson (Swed)
			Knutsen (Nor)
			Maersk (Dan)
			Royal Mail (Br)
			Swed. E. Asiatic (Swed)
			Westfal Larsen (Nor)

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U. S. AND FOREIGN LINES OPERATING ON U. S. FOREIGN TRADE ROUTES

Vessel Operation A	B	C	Name of Line and Nationality
			Trade Route No. 24
			U. S. Operators:
x			Pacif. Argentine Brazil
x			Pacif. Republics
			Foreign Operators:
	x		Westfal-Larsen (Nor)
			Trade Route No. 25 (1)
			U. S. Operators:
x			Grace
			Foreign Operators:
	x		Knutsen (Nor)
	x		Latin America (Nor)
	x		Westfal-Larsen (Nor)
	x		Independence (Pan)
			Trade Route No. 25 (2)
			U. S. Operators:
x			Grace
	x		West Coast
	x		Lloyd
		x	United Fruit
			Foreign Operators:
	x		Royal Mail (Brit)
	x		East Asiatic (Dan)
	x		Holland America (Neth)
	x		French (Fr)
	x		Fred Olsen (Nor)
	x		Johnson (Swed)
	x		Independence (Pan)
	x		Pacific Cruise (Mex)
	x		Permanente (Mex)
			Trade Route No. 26-A
			U. S. Operators:
x			Isthmian

Vessel Operation A	B	C	Name of Line and Nationality
			Trade Route No. 26-A (Cont)
			Foreign Operators:
	x		Blue Star (Brit)
	x		Donaldson (Brit)
	x		Furness (Brit)
	x		Royal Mail (Brit)
	x		East Asiatic (Dan)
	x		Holland America (Neth)
	x		Fred Olsen (Nor)
	x		Fruit Express (Nor)
			Trade Route No. 26-B
		x	U. S. Operators:
		x	American Pacific States Marine
		x	Foreign Operators:
	x		Blue Star (Brit)
	x		East Asiatic (Dan)
	x		Holland America (Neth)
	x		French (Fr)
	x		Fred Olsen (Nor)
	x		Fruit Express (Nor)
	x		Interocean (Nor)
	x		Johnson (Swed)
		x	
		x	**Trade Route No. 26(x)**
		x	U. S. Operators:
		x	States Marine
		x	Foreign Operators:
	x		East Asiatic (Dan)
	x		Fred Olsen (Nor)
	x		Fruit Express (Nor)
	x		Interocean (Nor)
	x		Johnson (Swed)
		x	
		x	**Trade Route No. 27**
		x	
		x	U. S. Operators:
		x	Oceanic

Vessel Operation A	B	C	Name of Line and Nationality
			Trade Route No. 27 (Cont)
		x	Foreign Operators:
		x	Union S.S. Co. of N. Z. (Brit)
		x	Pacific Island Transport (Nor)
		x	Pacific Australia Direct (Swed)
			Trade Route No. 28
		x	U. S. Operators:
		x	American President (R-W)
		x	Isthmian (also R-W)
			Foreign Operators:
			Klaveness (Nor)
			Maersk (Dan)
x			Salen-Skaugen (Swed)
x			Silver Java Pacific (Br. Neth)
x			Western Canada (Can)
x			
x			**Trade Route No. 29**
x			U. S. Operators:
		x	American Hawaiian
		x	American Mail
		x	American President (also R-W)
		x	Coastwise
		x	Isthmian (also R-W)
		x	Pacific Far East
			Pacific Transport
			States
			Waterman
x			Foreign Operators:
x			De La Rama (Phil)
			Monsuco (Phil)
			San Vincente (Phil)
			Amer. & Manchurian (Brit) (R-W)
		x	Bank (Brit) (R-W)

Vessel Operation A	B	C	Name of Line and Nationality
	x		**Trade Route No. 29** (Cont)
	x		Blue Funnel (Brit) (R-W)
			Prince (Brit) (R-W)
			Barber (Brit)
			East Asiatic (Dan)
			Maersk (Dan)
			Silver Java Pacific (Brit-Neth)
	x		Fern (Nor)
	x		Ivaran (Nor)
	x		Klaveness (Nor)
	x		Pacific Orient Express (Nor)
	x		Salen-Skaugen (Swed)
	x		Swedish East Asiatic (Swed)
			Trade Route No. 30
x			U. S. Operators:
			American Mail
	x		Isthmian
	x		Pacific Far East
			Pacific Transport
			Parry
			States
			Foreign Operators:
x			East Asiatic (Dan)
x			Silver Java Pacific (Brit-Neth)
			Klaveness (Nor)
	x		Pacific Orient Express (Nor)
			Salen-Skaugen (Swed)
			Trade Route No. 31
			U. S. Operators:
			Lykes*
x			Grace*
x			*Now operates as Gulf & So.
x	x		America S.S. Co.
x		x	
		x	Foreign Operators:

Vessel Operation A	B	C	Name of Line and Nationality
			Vergara (Chil)
			Grancolombiana (Col)
			Tropical Fruit (Ecud)
			Great Lakes/Europe
			U. S. Operators: None
			Foreign Operators:
			Fjell (Nor)
			Oranje (Neth)
			Swedish Amer. (Swed)
			Swedish Chicago (Swed)
			U. S. Pacific/South and East Africa
			U. S. Operators:
			States South Africa
			Foreign Operators:
			Silver (Br)
			Silver Java Pacific (Br-Neth)
			U. S. Pacific/Mediterranean-Black Sea
			U. S. Operators:
			American Pacific
			American President (R-W)
			Foreign Operators:
			Pacific Mediterranean (Grk)
			U. S. Atlantic/Atlantic Canada
			U. S. Operators:
			Alcoa
			American Republics
			Eastern S.S.
			South Atlantic
			National Gypsum
			Gypsum Transportation
			U. S. Gypsum

Vessel Operation A	B	C	Name of Line and Nationality
			Foreign Operators:
	x		Amer. & African (Br)
	x		Amer. & Indian (Br)
	x		Amer. & Manchurian (Br) (R-W)
	x		Cunard White Star (Br)
	x		Elder Dempster (Br)
	x		Furness (Br)
	x		Furness Prince (Br)
	x		Furness Red Cross (Br)
	x		Gypsum Packet (Br)
	x		Lamport & Holt (Br)
	x		Port (Br)
	x		Houston (Br)
	x		Java New York (Neth)
	x		Maersk (Dan)
	x		Markland (Can)
	x		MANZ (Can)
	x		Norwegian Amer. (Nor)
	x		Swedish Amer. (Swed)
			U. S. Pacific/Pacific Canada
			U. S. Operators:
			American Mail
			Puget Sound Freight
			Foreign Operators:
	x		Furness (Br)
	x		Royal Mail (Br)
	x		East Asiatic (Dan)
	x		Silver Java Pacif. (Br-Neth)
	x		Holland America (Neth)
	x		Canadian Gulf (Can)
	x		Klaveness (Nor)
	x		Pacific Orient Express (Nor)
	x		Johnson (Swed)
	x		Independence (Pan)
	x		Frank Waterhouse & Co. (Can)

Prepared in Trade Routes Branch,
March 1948, Research Division
United States Maritime Commission

VESSEL EMPLOYMENT IN U. S. TRADE

Activity of United States and Foreign Flag Dry Cargo Merchant Vessels in United States Foreign Trade with Europe—January-June, 1947

Since the close of the war, when United States flag dry cargo vessels were carrying more than 70 percent of cargoes in United States foreign trade as a whole, the trend of United States flag participation has been downward due to the re-entry of foreign flag shipping. However, in the first half of 1947, United States vessels continued to carry more than one-half of our foreign trade.

Consideration of problems engendered by the European Recovery Program focuses attention on the extent of employment of foreign flag vessels in United States foreign trade with Europe. For the period January-June 1947, United States flag vessel participation in this trade averaged about 60 percent in terms of entrances and clearances; vessel deadweight employed, and cargo carried. Vessels registered under the flags of the 16 foreign nations participating in the European Recovery Program accounted for most of the remainder or about one-third of the total. The relative position of United States and foreign flag vessels in United States—European trade during the first half of 1947 is summarized herewith:

Flag of Vessel	Total Trade: Sailings	Total Trade: Vessel DWT.	Total Trade: Cargo Tons	Export Trade: Clearances	Export Trade: Vessel DWT.	Export Trade: Cargo Tons	Import Trade: Entrances	Import Trade: Vessel DWT.	Import Trade: Cargo Tons
		(000)	(000)		(000)	(000)		(000)	(000)
Total	7634	75,536	26,099	4050	40,150	24,374	3584	35,386	1725[1]
				Percent of Total					
United States	58	61	60	57	60	62	59	62	39[1]
Foreign—Total	42	39	40	43	40	38	41	38	61
ERP Countries	34	32	33	35	32	32	34	31	49
Other Countries	8	7	7	8	8	6	7	7	12

[1]–Note that the tonnage of imports was only one-fourteenth as great as exports.

The attached statement shows in greater detail the activity of vessels employed in United States—European trade during January-June, 1947.

Source: U. S. Maritime Commission, Research Division.

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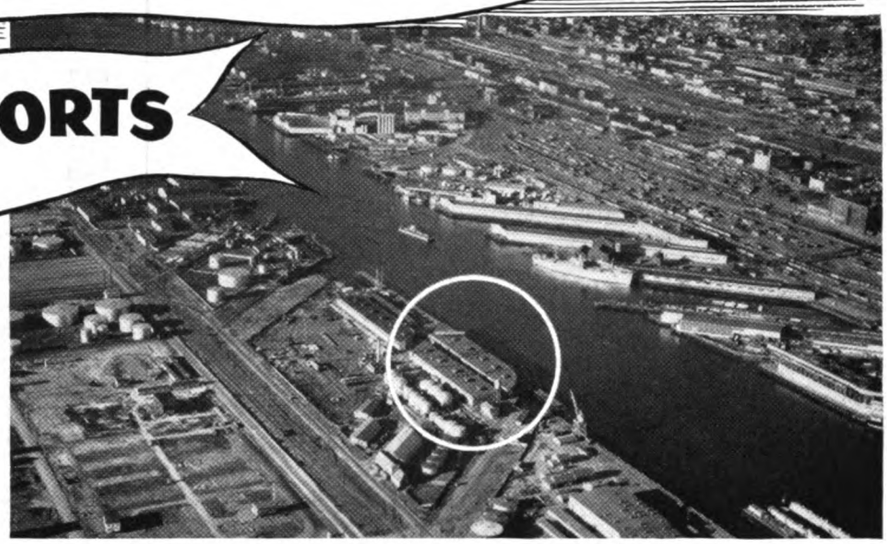
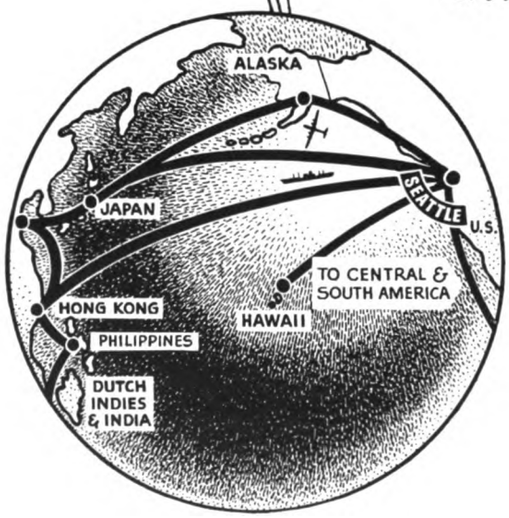
FOREIGN TRADE ZONE
★ ★ FOR PUGET SOUND ★ ★

IMPORTS



PROPOSED SITE

Circled area of East Waterway Terminal proposed by the Port of Seattle and Foreign Trade Zone Committee of Chamber of Commerce as logical site for duty-free import zone. It would provide, at minimum cost for conversion, the facilities and expansion area required by federal regulations, plus strategic location.



Magic Stimulus to Foreign Trade and Domestic Industry . . .

PUGET SOUND world traders and businessmen have been interested in a Foreign Trade Zone in this district for years. Their belief, backed by experience of foreign trade zones in strategic ports throughout the world, is that such a zone here would stimulate foreign imports, build businesses and industries directly and indirectly related to importing, and by increasing dollar credits to Pacific foreign nations would effectually increase our exports.

A zone for this area was endorsed by the Seattle Chamber of Commerce on November 4, 1947. The way has now been cleared for formal application by the Port of Seattle to the Foreign Trade Zone Board in Washington, D. C.

PORT OF SEATTLE COMMISSION

General Offices: Bell Street Terminal, Seattle 11, Washington

J. A. EARLEY, *President*
A. B. TERRY, *Secretary*
E. H. SAVAGE, *Vice-Pres.*
COL. W. D. LAMPORT, *Gen. Mgr.*

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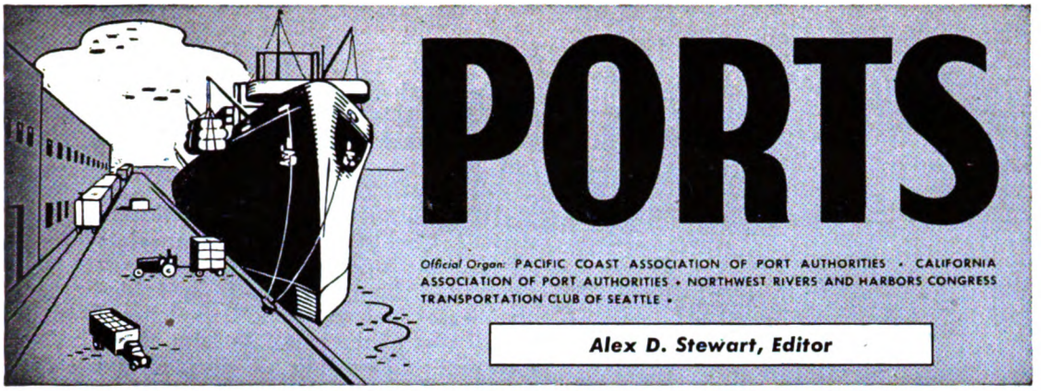


PORTS

Official Organ: PACIFIC COAST ASSOCIATION OF PORT AUTHORITIES • CALIFORNIA ASSOCIATION OF PORT AUTHORITIES • NORTHWEST RIVERS AND HARBORS CONGRESS TRANSPORTATION CLUB OF SEATTLE •

Alex D. Stewart, Editor

POSTWAR IMPROVEMENTS NOW IN PROCESS BY U. S. PORTS

Ports and harbors around the seaboard of the United States and in its territories are now undertaking many of the improvements planned during the war, when their facilities were taxed to the utmost and additions and renovations were impossible.

World trade, coastal and intercoastal commerce and domestic shipments move through these ports, with the former showing an upward trend in tonnage, the coastal and intercoastal falling off and the domestic movements producing significant percentages.

Port studies and projects include improvements and modernization steps designed to the continuation and development of shipping of all kinds and the sum total is an important adjunct to the nation's economic welfare.

Operating costs of ports, including the payrolls, the investments in tugs and barges, terminals, piers, handling equipment, gear, shops and the like stagger the imagination.

Interesting is the compilation by the United States Army Engineers for the year 1945 showing from 325 to 330 localities in the United States, Alaska, Puerto Rico and the Hawaiian Islands situated on navigable streams, bays, harbors, lakes and sea ports.

World trade is the spectacular issue, and thus receives greatest public attention. World trade in any percentage makes for additional payrolls and wider use of waterside facilities, and is spectacular because it is a competitive issue as between ports and trade areas.

A quick resume of what some ports plan for development of both their domestic and foreign commerce follows.

Boston's Hoosac Pier is Start of $20,000,000 Program

Recently organized under state authority the Port of Boston has presented a $20,000,000 modernization program to be activated within the next five years. Under construction is new Hoosac Pier No. 1. Plans for the new pier are shown below and a more detailed outline of the Port of Boston's future plans appear in The LOG for October, 1947. On the drawing boards are plans for piers at three other locations within the harbor area.

New York Announces $114,000,000 Program

Details of the Port of New York Authority plans appear in the April, 1948, issue of The LOG, but for summation the comprehensive plan is to rehabilitate the New York waterfront in twelve years at a cost of $114,000,000. Contemplated is construction of 32 new piers as replacement to old at cost of $87,000,000 and rehabilitation of old at cost of $27,000,000.

New Pier at Newport News

With nine major piers in operation, Newport News has another under construction and is launched on a program of constant improvement and activity to assure that ships sail full and down on quick turn-around from that port.

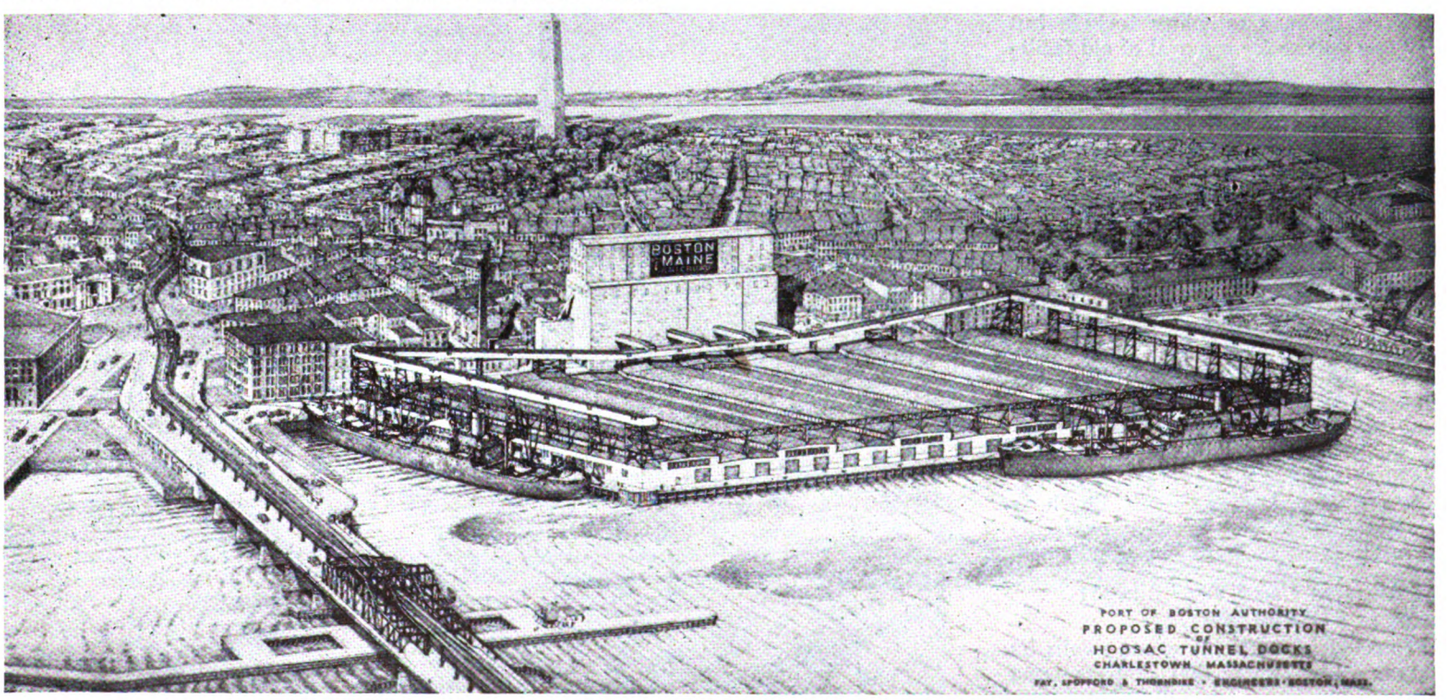
Baltimore Investments are in Millions

Baltimore handled 32,300,000 tons of waterborne commerce in 1946. Private interests have over $200,000,000 invested in port facilities which could not be replaced for double that amount today.

Three Fold Jump in Tonnage at New Orleans

At New Orleans a state act creating a Dock Board was followed by reorganization of the port authority and a vigorous campaign to develop trade. A tonnage which amounted to 12 million tons in 1939 is expected to total 35 million tons in 1948. A $13,000,000 expenditure in waterside properties, a $41,000,000 project to give the city a face lifting, and a vigorous solicitation program in Latin American countries and throughout the United States accounts for the increased volume.

BOSTON'S HOOSAC PIER NO. 1—This will be the first step in the Port of Boston Authority's long-range program to improve pier and dock facilities throughout the port, and to provide modern facilities to handle cargo safely, economically and efficiently. The new Hoosac Pier will be approximately 510 feet long on the east and west sides, and 464 feet long on the north and south. The south berth, facing the Charles River, will have a 10-foot apron, with 25-foot aprons on the east and west sides. Tracks, and ramps for trucks, will run directly onto the pier.



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THE NEWLY-OPENED FOREIGN TRADE ZONE NO. 3—Port of San Francisco.

Western Transportation Conference is Formed on the Pacific

Jumping to the Pacific Coast one finds port and shipping leaders organized as the Western Traffic Conference in a co-operative movement to develop tonnage. In 1937, 69 per cent of the nation's commerce to the Far East sailed via Pacific Coast ports. In 1947, the percentage had dropped to 37 per cent. Underlying causes such as absorptions of terminal charges, rail-water export rates, and aggressive promotion by Atlantic and Gulf ports, are known. Committees are working to solve the problems. Proceeding currently are plans for individual port improvement.

Modern Piers at Long Beach

Long Beach is proceeding at steady and consistent pace with construction of new facilities inclusive of new piers, bulk loaders, cargo handling equipment, and other modern conveniences, on a comprehensive development which in the period before today's high costs was announced as a $59,000,000 program. And when Long Beach speaks in terms of millions they mean millions for new construction because estimates include but very few dollars for removal of old facilities.

Sheds with all-clear spans 200 feet wide and 32 feet clear height, ranging in length to 1120 feet; piers with wide aprons, modernly designed to handle truck and rail interchange economically, and foundationed on concrete piling and fills supported by steel sheet piling are at Long Beach. Practical shipping men speak of them with a gleam in their eye. They recognize details of high, wide doors; flooring construction; wide paved approach driveways; good lighting and other attributes to occasion comment that Long Beach facilities are up to the minute in every respect. Financed from oil revenues, backed by a great industrial and agricultural area, Long Beach is helping shipping with cost saving facilities while at the same time helping herself.

Los Angeles Fiscal Year Budget Exceeds $17,000,000

Protected from Pacific ocean swells by the same breakwater that protects Long Beach harbor big, healthy Los Angeles harbor views the sister city coming out with the new look and realizes that between the two of them tonnage increased almost 50 percent between the years 1941 and 1945, each proportionately. Based on the slogan: "Made To Measure With Service To All the World As Its Only Yardstick, Los Angeles Harbor Was Built on Purpose" Los Angelicans have invested more than $70,000,000 in its port facilities and have adopted an all-time record budget of $17,069,539 for the current fiscal year's operation. Of this amount $9,215,000 has been earmarked for new construction. In progress is construction of an up-to-date passenger and freight terminal at an estimated cost of $3,500,000. This project includes a wharf, 1400 feet long, and a transit shed, 1100 feet long.

Mission Rock Pier Heads San Francisco's Construction Projects

Along San Francisco's Embarcadero are 43 deep water piers. The famed Ferry Building, Fisherman's Wharf, the refrigeration terminal, and State Belt Railroad are all part of the plant. Policies of the Port of San Francisco are directed and determined by the Board of State Harbor Commissioners, a board of three members appointed by the goveronr of California.

The major portion of San Francisco's piers were built between 1900 and 1929. Substantially constructed originally, of near uniform design of face, they continue today as an imposing array of waterfront structures. With the war over unusually large sums have been expended during the past two years to bring the wharves and structures into first class condition. This program is to be continued until the backlog of deferred maintenance is overcome.

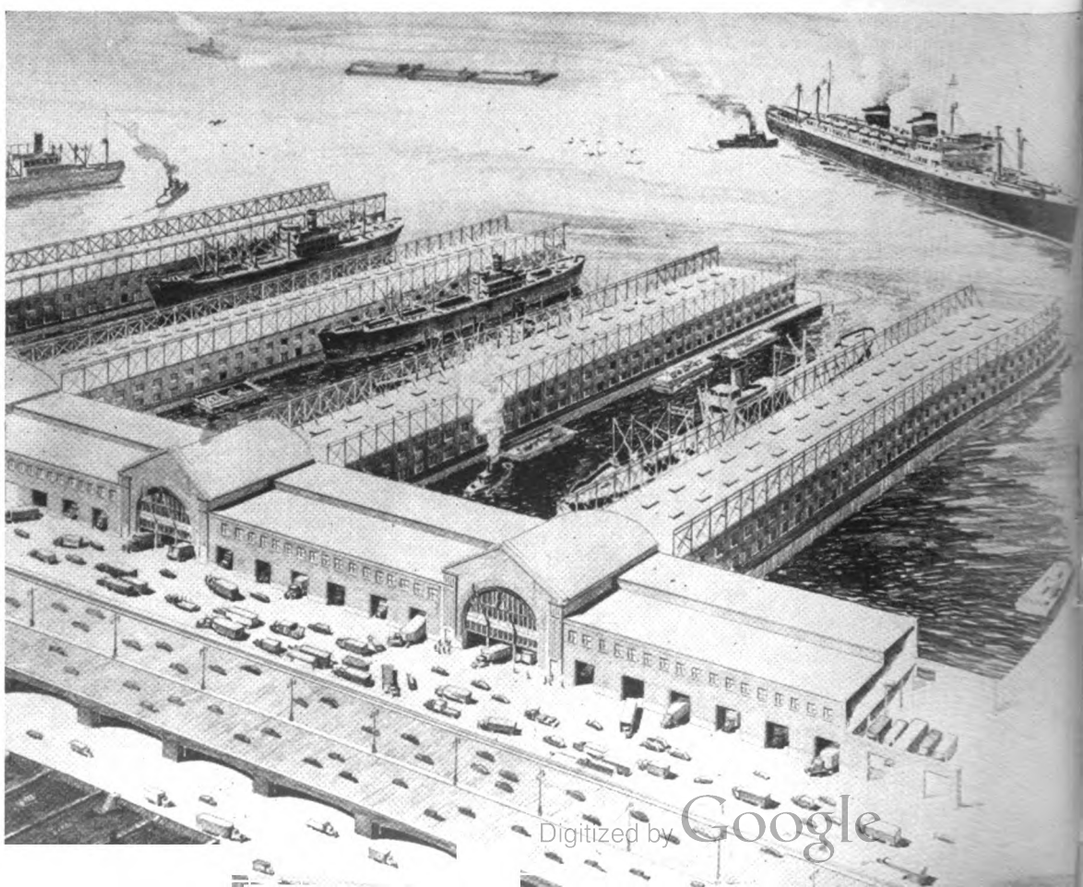
New construction projects include completion of the Mission Rock project, a $6,000,000 facility, planned to provide berthing space for eight ships; rearrangement of Pier 45 for establishment of San Francisco's Foreign Trade Zone; a new grain elevator and facilities for bulk cargoes and a new fish pier.

Oakland Board Works on Water, Air and Highway Transport

Officers and commissioners of the Port of Oakland have their master plan con-

NEW YORK'S CHELSEA PIERS will be modernized to look as they do in the picture below. Their bulkhead sheds will be deepened to 95 feet, and electric cargo hoists for handling cargo between the first and second decks will be installed.

The second deck of the bulkhead sheds will provide space for handling cargo hoisted from trucks below. Back-up spaces for 146 tractor-trailer units, or 228 medium-sized trucks, will serve the seven piers clear of the marginal way.



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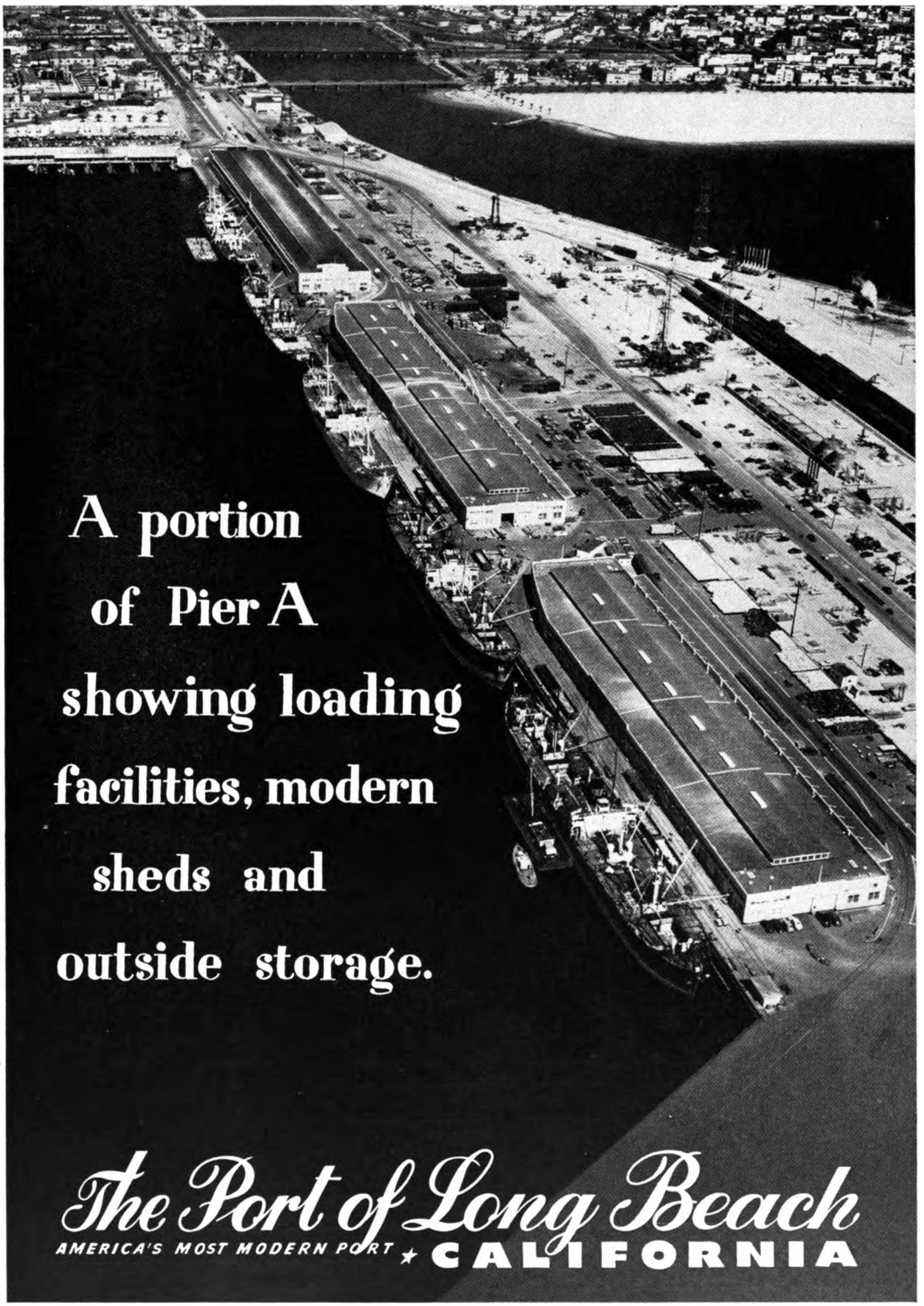

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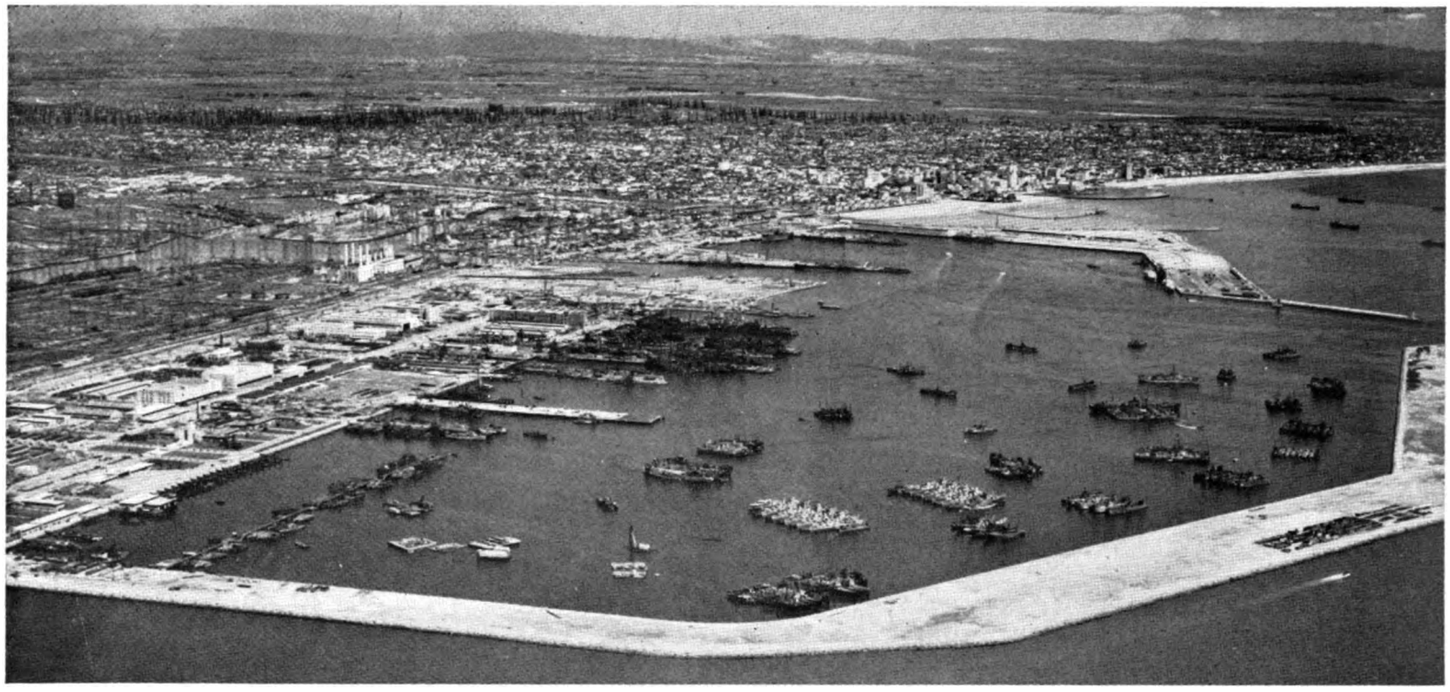

PORT OF LONG BEACH, CALIFORNIA—At this modern port Long Beach is helping shipping with cost saving facilities while at the same time helping herself.

stantly in mind to keep abreast of the port's needs with ample well maintained facilities in the port area. They also have plans for the construction of a marine terminal in the San Leandro Bay area as distinguished from the already improved Outer, Middle, and Inner Harbor sections.

Dredging and filling of 2,200,000 cubic yards of material and reclamation of 177 acres of land for industrial and terminal purposes are involved in the San Leandro project.

More than a half million dollars is to be spent increasing and improving facilities at the Oakland Municipal Airport under direction of the Oakland Port Commission. Administration building additions, runway improvements and lengthening, and supplementary paving of the port's big airfield are contemplated.

Other improvements center around the

PORT OF OAKLAND, CALIFORNIA—left to right, the Bay Bridge approach, the Oakland Army Base, the Port of Oakland's Outer Harbor Terminal, Albers Mill, the Southern Pacific Pier, and a portion of the Oakland Naval Supply Center.

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We're shipping through Portland, Oregon

THESE STEAMSHIP LINES CARRY CARGO TO THE ORIENT & WORLD PORTS

Portland is the fresh water port of the Pacific. Ships drop their barnacles when they come into Portland, saving owners the time and expense of dry-docking. But there are 5 other reasons why the steamship companies like Portland:

1. Shipping from Portland is the "shortest route" to the Orient. It is 4,333 miles to Tokyo, only 10 to 18 days on the ocean.

2. Portland's shipside warehouses can store any cargo. There are concrete grain elevators, concrete bulk storage bins, ventilated warehouses and spacious open and covered areas.

3. Four major railroads bring freight into Portland daily—cargo to be loaded on ships and sent to the Orient and other world ports.

4. Fast lift trucks, electrically driven conveyors, suction systems and other modern equipment allow Portland's longshoremen to load and unload ships with dispatch.

5. Longshoremen and steamship companies operate on a friendly business basis to the advantage of themselves and shippers.

SEND FOR FREE COPY OF BOOKLET "SHIPPING THROUGH PORTLAND, OREGON"

Commission of Public Docks

PORTLAND, OREGON

Commissioners Geo. H. Buckler, Chairman; L. R. Teeple, Vice-Chairman; Homer T. Shaver, Chester A. Moores, John W. Shuler
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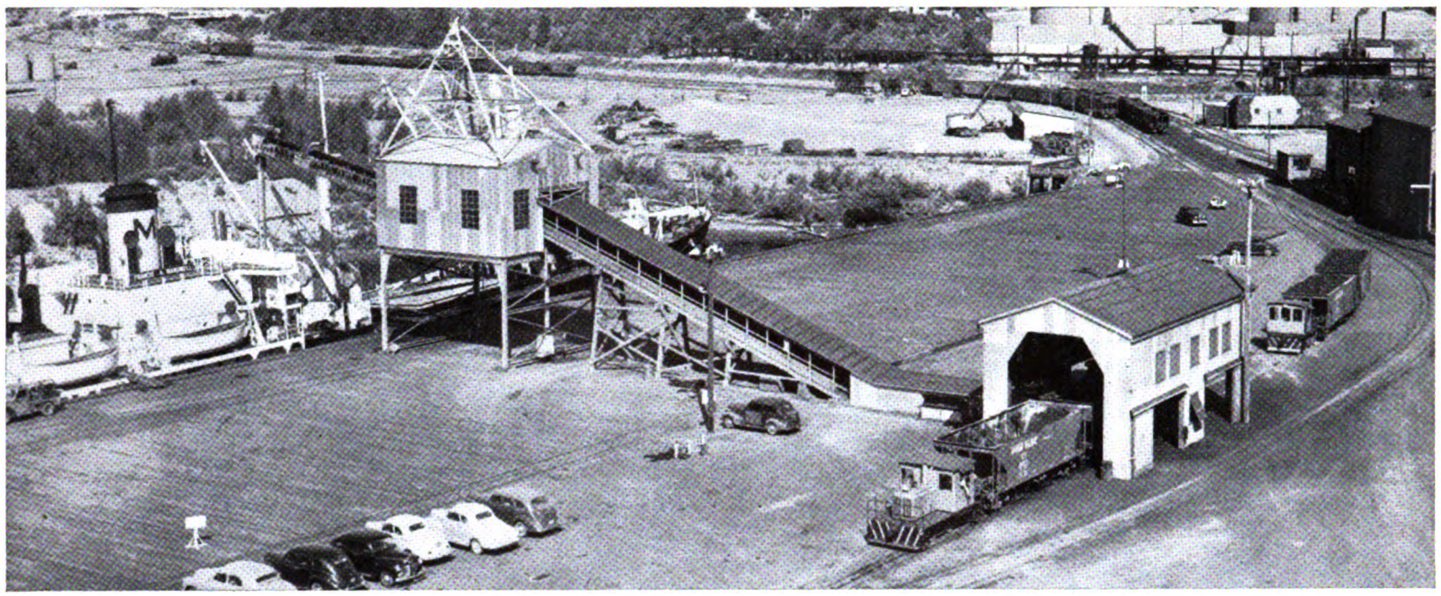


AT PORTLAND, OREGON—New bulk loader installed in 1947, at the cost of $150,000 for handling coal, phosphate, bulk minerals, and fertilizers.

present construction by the state of the Eastshore Freeway, a six lane high speed highway, leading into Oakland from interior shipping points. As the Freeway nears completion the Board will proceed with the construction of their long planned Embarcadero, an 80 foot wide roadway along the waterfront to provide expeditious access to and from the highway and a new improved paved thoroughfare in the Inner Harbor area.

Portland's New $2,000,000 Pier

Portland's major current construction contract is a new $2,000,000 open pier which will provide additional berthing space totaling 1700 feet on the riverfront. Recently installed is a new bulk loader designed for handling coal, phosphate, bulk minerals, fertilizers and similar commodities. Programmed is considerable maintenance work including reposting and piling renewal at the bulk cargo pier, and work on the port owned oil dock. The port's operating and maintenance budget for the coming 12 months will total close to a million dollars.

Inland river traffic to and from up river points on the Columbia and Willamette rivers reached a new high in 1947. Petroleum products up river, barged wheat and rafted logs down stream, constitute the major portion of this traffic.

Tacoma Budgets $1,500,000 for Improvements

Tacoma's investments for the future on work now in progress total $1,500,000. Contract has been awarded for addition to the port cold storage plant which will double the capacity to 2,000,000 cubic feet. Of reinforced concrete and tile construction, four stories in height, equipped with latest refrigeration controls and sharp freezer units the addition is to cost $700,000.

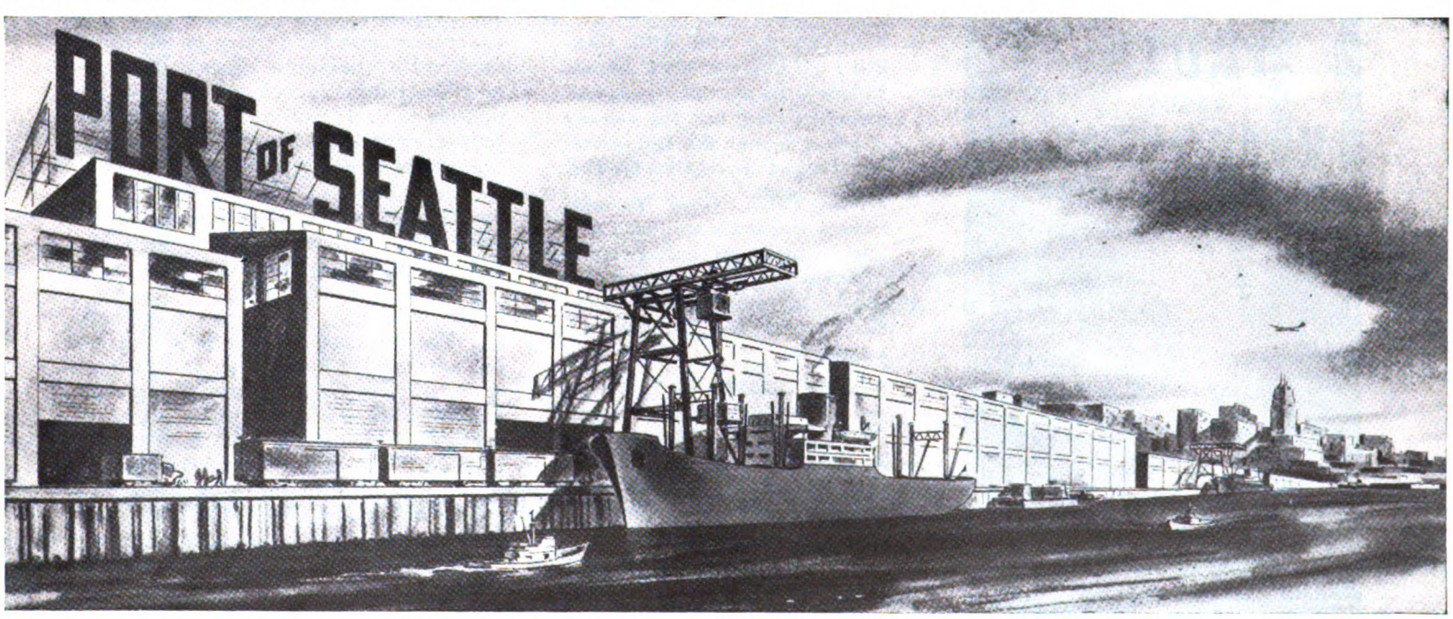
Pier No. 1 is being rebuilt at a cost of $300,000. Recently installed is a Colby 60 ton capacity luffing boom type traveling crane. Waterways have been improved and 300 acres of industrial sites provided by dredging and fill with work in progress for improvement of an additional 300 acres of tideland and waterway extensions.

Seattle's Port of the Future

Seattle has grown up to where attention is being given to next steps to be taken for waterfront development. A viaduct which would divert high speed through traffic from pier level while at the same time taking some of the load away from up town thoroughfares is in the financing and condemnation proceedings stage.

Being considered is a quay type wharf extending for 3,000 feet along the central waterfront to replace short finger piers originally built 50 years and more ago. They served well for the Alaska trade during gold rush days, latterly many of them have been used as fish terminals. Replacing with finger piers long enough to berth today's Alaska and ocean carriers is impractical. If a marginal design is the answer port engineers have project-

PORT OF SEATTLE'S plan for quay-type parallel development will have a continuous unobstructed 40-ft. wide timbered apron, providing double-track direct loading from railway cars. The cost of the entire development is estimated at 15 to 18 million dollars.



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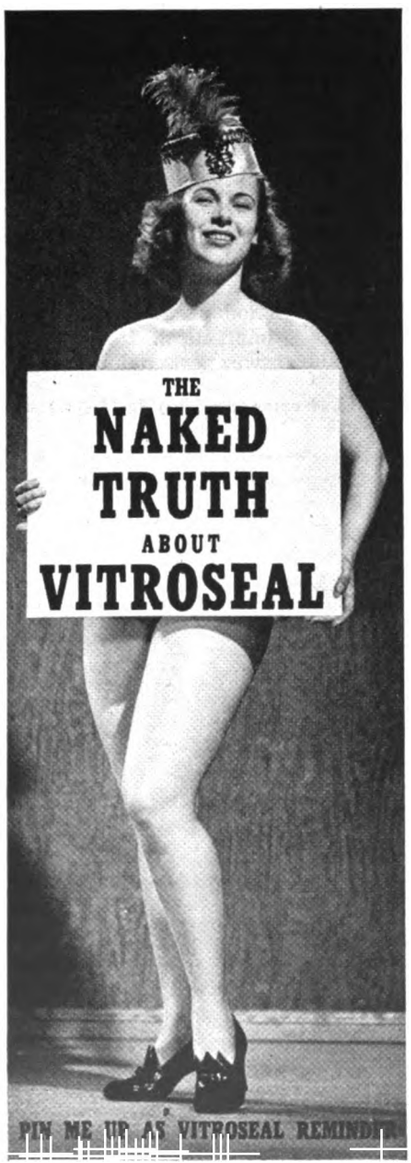
THE PORT OF LOS ANGELES . . . Wide main channel with busy transit sheds and boats being worked at piers. Portions of West Basin in upper left, Cerritos Channel in upper right. Marine terminal facilities of the port are shown on the main channel, right center, and along East Basin, upper right area, and along slip one, upper center.

ed preliminary designs for purpose of securing public study and comment. Embodied in the design are depressed areas and other features for movement of rail and truck traffic. At the same time studies proceed on plans to revamp and modernize the existing long finger piers elsewhere within the harbor area. Which step to take is in the balance.

A Fishermen's Cove project is also in the designing stage. This contemplates tripling the capacity of present fishing vessel moorings to total of approximately 700 vessels, and development of a merchandising area for service to the fishermen and to the public. This construction and waterfront developments are port district projects and probably will have to be accomplished by a public bond issue.

A private betterment completed in July is the complete rehabilitation of the old Great Northern Dock, designed and adapted for use by the American Mail Line in operating their service to the Orient.

The exigency of war put the Seattle and Tacoma port districts in the airport business, under jurisdiction and management of the Seattle Port Commission. Estimates of work now in progress include $2,700,000 for completion of administration building and $600,000 for sewer, water, and other utility purposes. Investments in the Seattle-Tacoma airport include $3,000,000 supplied by the port districts; $8,000,000 by the federal government, and $4,000,000 by the air lines.



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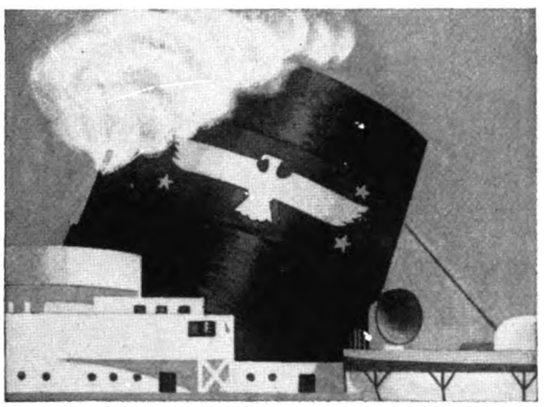

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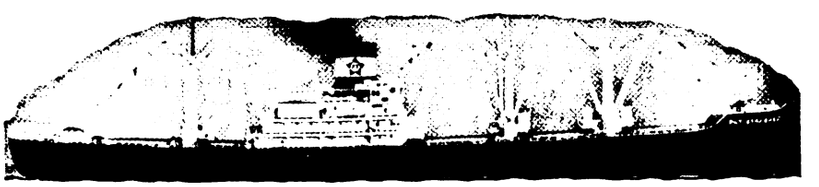

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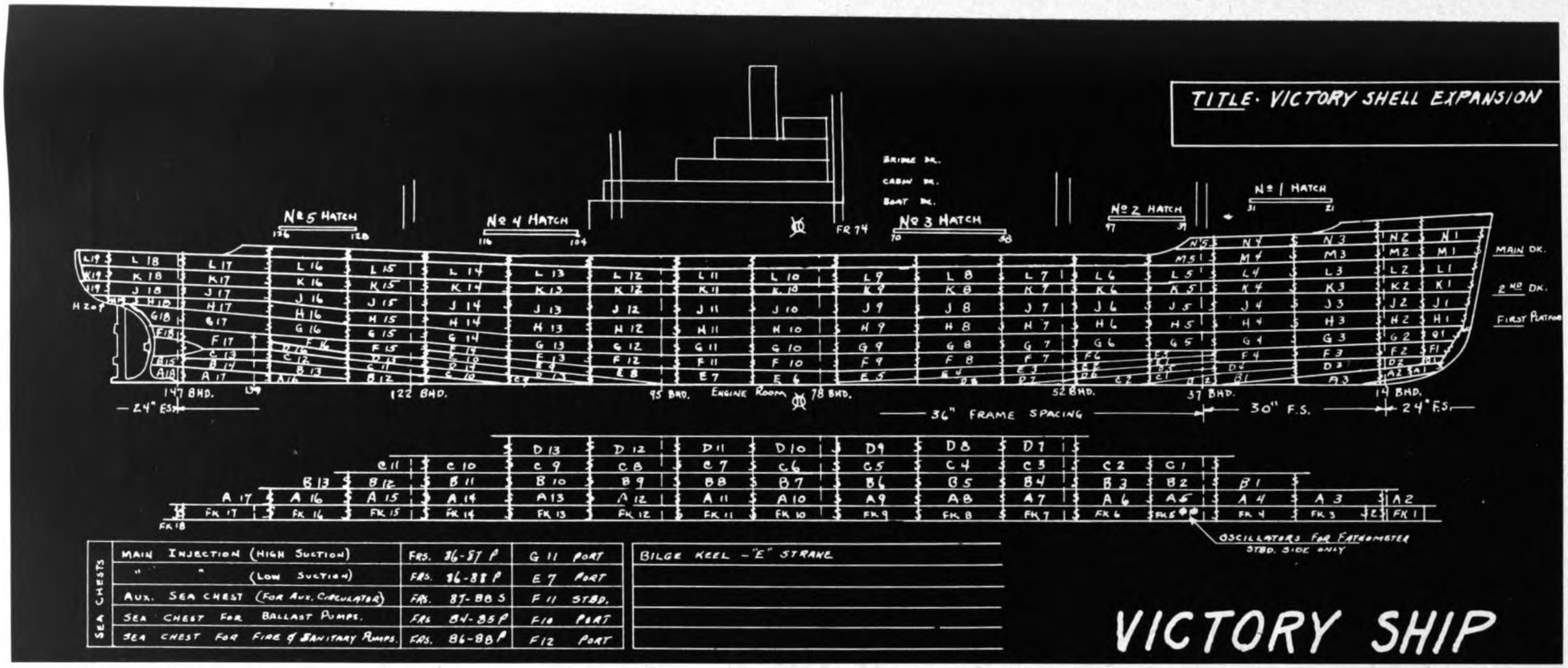
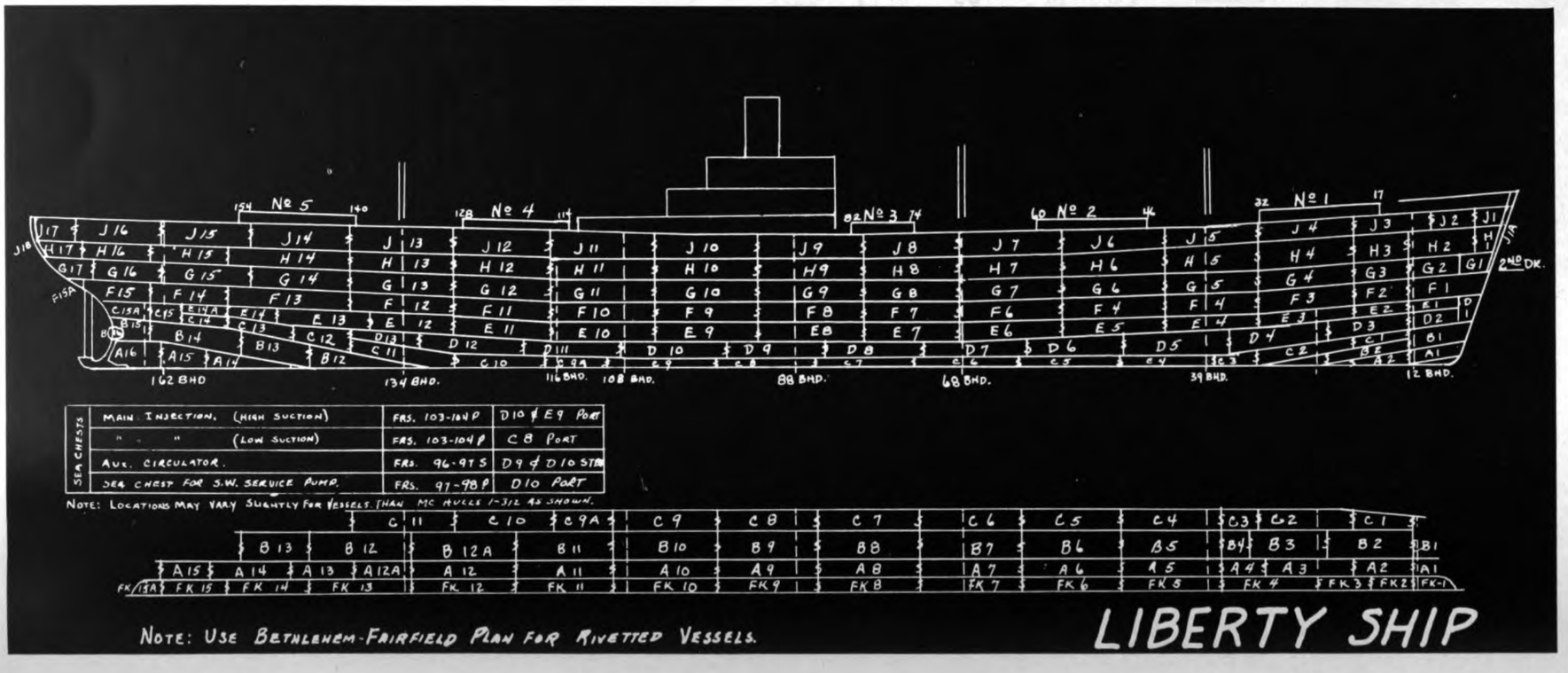
SHELL EXPANSION CHARTS



SEA CHESTS			
	MAIN INJECTION (HIGH SUCTION)	FRS. 86-87 P	G 11 PORT
	" " (LOW SUCTION)	FRS. 86-88 P	E 7 PORT
	AUX. SEA CHEST (FOR AUX. CIRCULATOR)	FRS. 87-88 S	F 11 STBD.
	SEA CHEST FOR BALLAST PUMPS.	FRS. 84-85 P	F 10 PORT
	SEA CHEST FOR FIRE & SANITARY PUMPS.	FRS. 86-88 P	F 12 PORT



SEA CHESTS			
	MAIN INJECTION. (HIGH SUCTION)	FRS. 103-104 P	D10 & E9 PORT
	" " (LOW SUCTION)	FRS. 103-104 P	C8 PORT
	AUX. CIRCULATOR.	FRS. 96-97 S	D9 & D10 STBD
	SEA CHEST FOR S.W. SERVICE PUMP.	FRS. 97-98 P	D10 PORT

NOTE: LOCATIONS MAY VARY SLIGHTLY FOR VESSELS. THAN MC MULLS 1-3/2 AS SHOWN.

NOTE: USE BETHLEHEM-FAIRFIELD PLAN FOR RIVETTED VESSELS.

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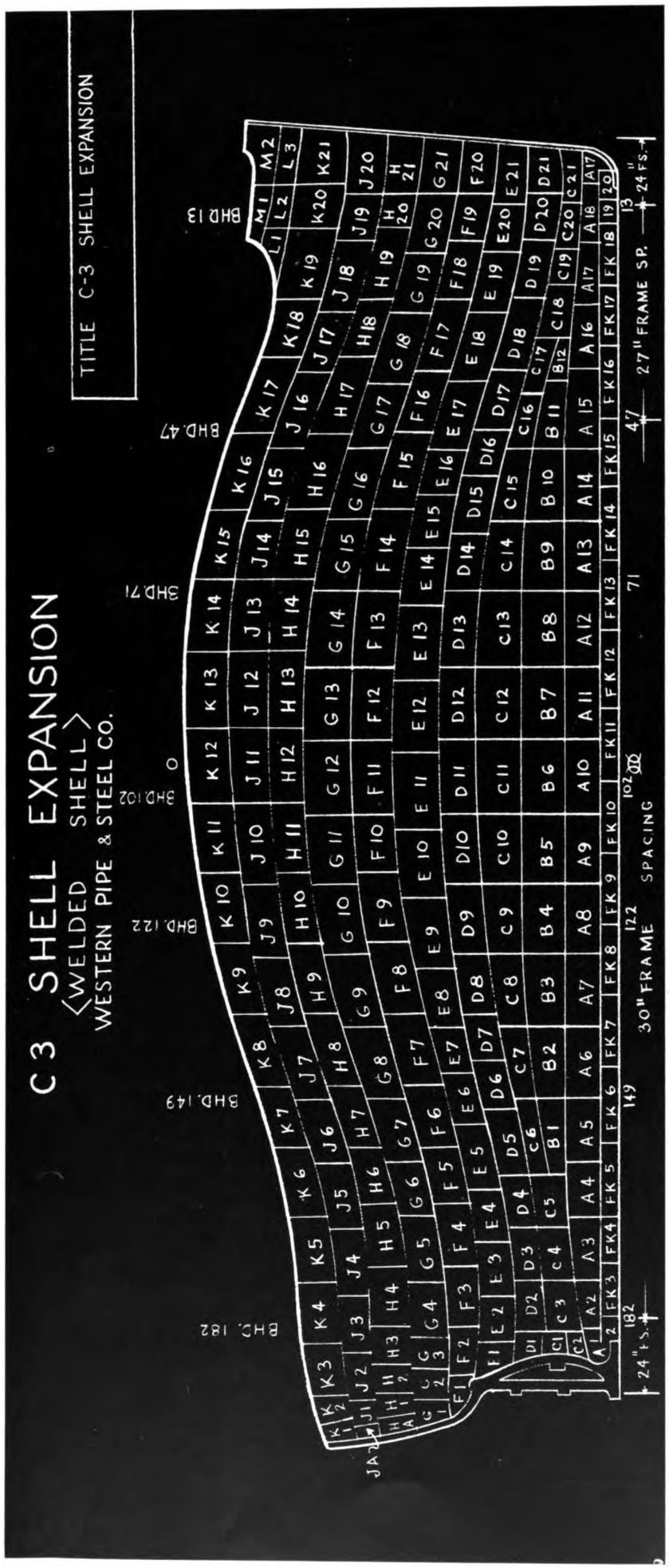
SHELL EXPANSION CHARTS - Continued



Report on U. S. Ship Construction and Repairs

(Continued from Page 75)

	Number	Gross Tons
Purse Seiners	1	425
Motor Launches, Ketches, Yachts and Yawls	2	187
Towboats	14	4,460
Tugs	8	1,190
Trawlers and Tuna Clippers	5	1,340
Cargo Vessel	1	915
Fireboat	1	95
Total	32	8,612

While the total gross tonnage of these various types of small craft is small, they did afford, by virtue of their number, substantial volume of work during the last year and represent by tonnage about 53.5 per cent of the total tonnage of commercial ships and small craft contracted for in the United States in 1947.

Ship Repair Yards

While the volume of reconversion work, as stated, is expected to decrease largely in volume during the next year, ship repairing, in general, has been active and it is anticipated that it will continue to be active as long as the great demand for shipping services exists. Reports indicate approximately 18,000 vessels, each of 1,000 gross tons or over, and 13,000 vessels under 1,000 gross tons, were repaired during the past fiscal year in 102 yards reporting.

Motive Power

The aggregate horsepower of the 42 seagoing merchant vessels, each of 1,000 gross tons or over, delivered during 1947, was 304,970, of which 31 vessels of 265,600 horsepower were of geared turbine drive, 1 vessel of 4,800 horsepower with diesel electric, and 10 vessels of 34,570 horsepower were of diesel drive.

Naval Vessels

On January 1, 1947, the only Naval contracts remaining uncompleted in private shipyards were the following, and on some of which, work has been suspended:

Type	Number	Displacement Tonnage
Destroyers	4	8,800
Heavy Cruisers	3	51,000
Destroyer Tender	1	8,000
Aircraft Carriers	2	59,500
Light Cruisers	2	29,400
Large Cruiser	1	27,500
Submarine Rescue Vessel	1	1,598
Ice Breaker	1	5,300
Total	15	191,098

Actual deliveries of Naval vessels from private shipyards in 1947 were as follows:

Type	Number	Displacement Tonnage
Destroyers	3	6,600
Destroyer Tender	1	8,000
Aircraft Carriers	2	59,500
Submarine Rescue Vessel	1	1,598
Ice Breaker	1	5,300
Total	8	80,998

Uncompleted Naval contracts in hand in private shipyards as of January 1, 1948 were as follows:

Type	Number	Displacement Tonnage
Large Cruiser	1	27,500
Heavy Cruisers	3	51,000
Light Cruisers	2	29,400
Destroyers	3	6,600
Total	9	114,500

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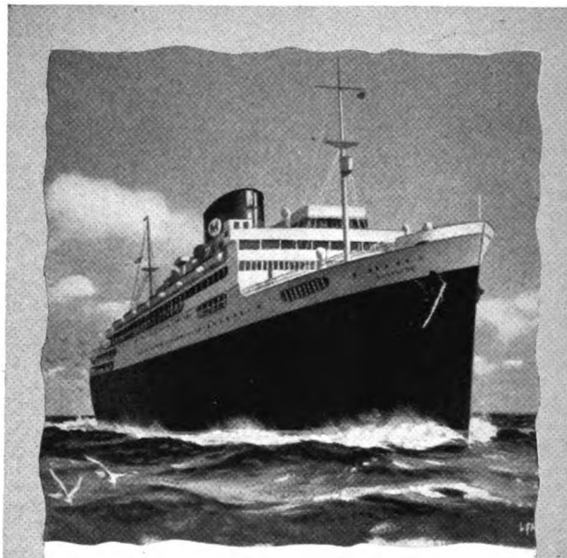

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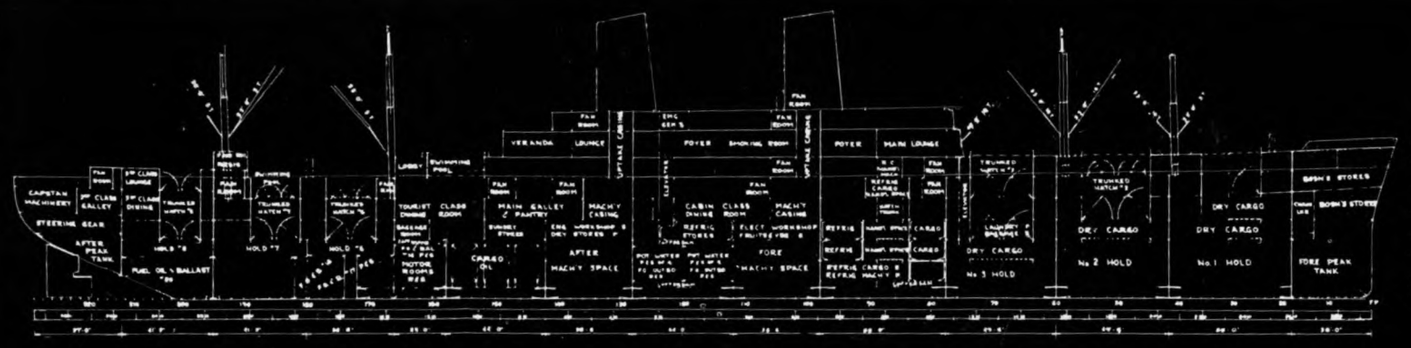

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609'-3¾"	LENGTH OVERALL
590'-0"	LENGTH ON 29'-0" DWL
573'-0"	LENGTH BETWEEN PERPS
75'-6"	BREADTH MOLDED
79'-6"	BREADTH EXTREME
61'-6"	DEPTH MOLDED TO PROMENADE DECK (AT SIDE)
38'-6"	DEPTH MOLDED TO UPPER DECK
43'-6"	DEPTH MOLDED TO 'A' DECK
34'-6"	DEPTH MOLDED TO 'B' DECK
26'-0"	DEPTH MOLDED TO 'C' DECK
30'-1⅞"	MEAN DRAFT TO SUBDIVISION W.L. (S.W.)
23507	DISPLACEMENT TO SUBDIVISION W.L. (S.W.)
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	SPEED DESIGNED 19 KNOTS
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	WINCHES - LAKE SHORE ENG. CO, SGL. SP — 10 SGL. DRUM AND 4 DBL. DRUM ELECTRIC
	WINDLASS - LIDGERWOOD ELECTRIC
	STEERING GEAR - LIDGERWOOD ELECTRO-HYDRAULIC
	WARPING CAPSTANS 2 LIDGERWOOD ELECTRIC
	BOOMS (8) 10-TON, (8) 5 TON

TRUNKED CARGO HATCHES

COMPARTMENT				NET CAP. CU. FT.	LOCATION OF C.G. ABOVE BL	LOCATION OF C.G. FROM ⊠
No. 1 HOLD	A DK.	TO PROM DK.		3938	55.9'	230.2F
2	"B"	UPPER		13456	44.6'	180.7F
2	UPPER	FROM		7064	59.5'	180.6F
3	C DK.	A		11201	35.5'	123.8F
3	A	PROM		13715	49.5'	129.4F
6	C	A		8838	35.4'	157.5A
6	A	UPPER		4089	48.4'	157.5A
7	C	A		8062	55.5'	169.2A
8	C	A		5619	36.9	251.0A
8	A	UPPER		2023	52.F	231.0A
			TOTAL	78405	43.73'	29.19F

FUEL OIL & SALT WATER

LOCATION OF C.G. (FT) ABOVE BL	LOCATION OF C.G. (FT) FROM ⊠	COMPARTMENTS				FUEL OIL BARRELS	FUEL OIL TONS	S.W. TONS @ 35#
15.5	273.7F	FORE PEAK TANK			STEM- FR. 18			187.80
2.8	227.3F	DBL BOTTOM TANK	1	FR.	18 - 42	626.9	94.53	103.69
2.8	177.1F	" " "	2P	"	42 - 60	595.7	83.81	91.91
2.8	177.1F	" " "	2S	"	42 - 60	595.7	83.81	91.91
2.5	129.7F	" " "	3S	"	60 - 78	1020.8	153.96	168.83
3.1	128.0F	" " "	3P	"	60 - 78	325.6	49.11	53.86
3.1	128.0F	" " "	3S	"	60 - 78	325.6	49.11	53.86
2.5	77.7F	" " "	4S	"	78 - 98	1120.0	168.92	185.23
2.9	75.4F	" " "	4P	"	78 - 98	665.0	100.29	109.99
2.9	75.4F	" " "	4S	"	78 - 98	665.0	100.29	109.99
2.5	30.8F	" " "	5S	"	98 - 118	798.6	120.44	132.09
2.8	30.5F	" " "	5P	"	98 - 112	599.1	90.36	99.09
2.8	30.5F	" " "	5S	"	98 - 112	599.1	90.36	99.09
2.5	10.6A	" " "	6S	"	112 - 128	901.6	135.98	149.11
2.8	10.3A	" " "	6P	"	112 - 128	719.0	108.44	118.92
2.8	10.3A	" " "	6S	"	112 - 128	719.0	108.44	118.92
14.1	0.4F	F.O. SETTLING TANK	11P	FRS	112 - 120	670.5	101.18	
14.1	0.4F	" " "	11S	"	112 - 120	670.5	101.18	
14.1	21.4A	" " "	14P	"	120 - 128	670.5	101.18	
14.1	21.4A	" " "	14S	"	120 - 128	670.5	101.18	
14.1	0.5F	F.O. DEEP TANK	12P	"	112 - 120	1076.4	162.34	
14.1	0.5F	" " "	12S	"	112 - 120	1076.4	162.34	
14.1	21.5A	" " "	13P	"	120 - 128	1074.0	161.98	
14.1	21.5A	" " "	13S	"	120 - 128	1074.0	161.98	
2.5	51.6A	DBL. BOTTOM TANK	7S	FRS	128 - 142	799.1	120.52	132.17
2.9	51.0A	" " "	7P	"	128 - 142	564.4	85.12	93.34
2.9	51.0A	" " "	7S	"	128 - 142	564.4	85.12	93.34
2.5	92.9A	" " "	8S	"	142 - 158	912.6	137.64	150.96
3.0	90.1A	" " "	8P	"	142 - 158	415.0	62.59	68.63
3.0	90.1A	" " "	8S	"	142 - 158	415.0	62.59	68.63
3.1	138.4A	" " "	9P	"	158 - 172	488.0	73.60	80.71
3.1	138.4A	" " "	9S	"	158 - 172	486.8	73.42	80.52
17.6	125.4A	F.O. DEEP TANK	16P	FRS	158 - 166	637.0	96.07	105.35
17.6	125.4A	" " "	16S	"	158 - 166	637.0	96.07	105.35
13.9	154.9A	" " "	17P	"	166 - 180	828.2	124.91	136.97
13.9	154.9A	" " "	17S	"	166 - 180	828.2	124.91	136.97
9.7	166.9A	" " "	18S	"	174 - 182	1062.1	160.18	175.66
11.3	205.3A	" " "	19S	"	182 - 195	1955.7	294.95	323.46
12.7	231.2A	" " "	20S	"	195 - 213	1021.5	154.06	168.94
23.8	268.2A	AFTER PEAK TANK			213 - STERN			112.40
7.99	31.7A				TOTAL	26794.5	4342.74	3907.69

FRESH WATER

COMPARTMENT				GALLONS	TONS @ 36 ℄	LOCATION OF C.G. (FT) ABOVE BL	LOCATION OF C.G. (FT) FROM ⊠
DEEP TANK (POTABLE WATER)	"10 P.	FRS.	112 - 120	26098	96.91	15.5	0.5F
" " " "	"10S	"	112 - 120	26098	96.91	15.5	0.5F
" " " "	"13P	"	120 - 128	26098	96.91	15.5	21.5A
" " " "	"13S.	"	120 - 128	26098	96.91	15.5	21.5A
			TOTAL	104392	387.64	15.5	10.50A

DRY CARGO

COMPARTMENT				GRAIN CU. FT	BALE CU. FT	LOCATION OF C.G. (FT) ABOVE BL	LOCATION OF C.G. (FT) FROM ⊠
No. 1 HOLD	DBL. BOT TO C.D.	FRS	18-42	23388	18.75	15.8	227.0F
1	C.D.	B.	18-42	10506	8638	30.5	227.1F
1	B.	A.	18-36	11057	9553	40.6	237.2F
2	DBL. BOT	C.	42-60	41974	36743	15.9	177.5F
2	C DK.	B.	42-60	16461	14302	30.3	178.5F
2	DBL. BOT	D.	60-78	32461	27422	11.8	128.7F
3	D DK.	C.	60-78	20855	18482	21.5	124.1F
3	D.T. TOP	C.	166-180	15989	13144	22.6	155.0A
7			180-195	15611	13368	22.2	194.2A
A			195-213	8623	7121	22.3	233.3A
STRONG ROOM	C DK.		60-64.5	1085	962	30.5	149.1F
SPECIAL CARGO	D.		60-64	5217	4579	21.5	148.9F
			TOTAL	203007	174389	20.63	100.09F

SHIPS DRY STORES & MISC.

COMPARTMENT					NET CAP. CU. FT.	LOCATION OF C.G. (FT) ABOVE BL	LOCATION OF C.G. (FT) FROM ⊠
ENGINEER'S STORES	P	C DK.	FRS	142-150	2525	30.1	79.7A
DRY STORES	P	"	"	136-142	2320	30.1	62.7A
"	S	"	"	142-148	1373	30.1	77.2A
SUNDRY STORES	℄	"	"	142-148	2041	30.1	79.2A
FLOUR ROOM	P	"	"	142-146	287	30.7	75.3A
BAGGAGE ROOM	S	"	"	60-78	6467	29.9	125.5F
" (TOURIST CLASS)	℄	"	"	161-166	2421	30.0	128.9A
CLEAN LINEN	P	"	"	72-78	1512	29.9	115.0F
SOILED	P	"	"	72-78	864	30.0	108.1F
DRY STORES (3RD CLASS)	P	B.	"	213-219	1036	42.4	243.2A
LINEN ISSUANCE ROOM	S	"	"	57-60	389	38.9	158.2F
BOSN'S STORES	S	"	STEM	FR. 15	2934	42.0	279.5A
"	"	A.	"	18	5462	52.2	215.1F
"	"	UPPER DK.	"	6	2181	61.1	218.5F
				TOTAL	31514	37.53	87.29F

REFRIGERATED CARGO

COMPARTMENT				NET CAP. CU. FT.	LOCATION OF C.G. (FT) ABOVE BL	LOCATION OF C.G. (FT) FROM ⊠
REFRIG. COMPARTMENT	"1 P	C DK. TO B DK.	FRS 78-84	2413	30.1	196.6F
"	"2 S	"	78-89	3501	30.0	191.6F
"	"3 P	"	84-98	4072	29.9	67.4F
"	"4 ℄	"	91-98	1420	30.1	59.6F
"	"5 P D.K.	C.	78-84	2481	21.3	97.6F
"	"6 S	"	78-84	2481	21.3	97.6F
"	"7 P	"	84-91	1937	21.5	80.1F
"	"8 S	"	84-91	2055	21.5	80.1F
"	"9 P	"	91-98	2851	21.4	56.6F
"	"10 S	"	91-98	3079	21.5	59.8F
"	"11 P	B-3RD D.	78-84	2845	12.6	95.1F
"	"12 S	"	78-84	2132	12.7	96.4F
"	"13 S	"	84-90	3367	12.7	72.6F
			TOTAL	33032	22.21	80.33F

SHIPS REFRIGERATED STORES

COMPARTMENT				INSIDE OF BATTENS, COILS, GRATING ETC. CU. FT.	LOCATION OF C.G. (FT) ABOVE BL	LOCATION OF C.G. (FT) FROM ⊠
DAIRY	C DK. TO B DK.	P	FRS 124-128	976	30.3	26.4A
MEATS	"	P	" 112-124	4259	30.3	9.2A
POULTRY	"	℄	" 112-117	1617	30.3	3.8F
FRUIT & VEG.	"	S	" 98-112	2968	30.3	29.7F
"	"	S	" 112-121	2169	30.3	0.2A
FISH	"	S	" 117-121	596	30.3	8.3A
ICE CREAM	"	S	" 121-124	262	29.9	17.6A
ICE STORAGE	"	S	" 121-124	568	30.3	17.8A
THAW ROOM	"	P	" 117-124	1131	30.1	11.3A
WINE	"	P	" 128-132	1149	30.3	43.0A
REFRIG. SPACE	B A	P	" 213-216	217	42.2	275.0A
"	"	P	" 136-139	782	39.1	58.9A
			TOTAL	16168	30.59	7.12A

CARGO OIL

COMPARTMENT			GALLONS	TONS @ 40 ℄	LOCATION OF C.G. (FT) ABOVE BL	LOCATION OF C.G. (FT) FROM ⊠
DEEP TANK	"1 P	FRS. 143-147	395558	1321.21	15.9	79.5A
"	"1 S	" 143-147	395558	1321.21	15.9	79.5A
"	"2 S	" 147-152	571665	1124.21	15.9	93.0A
"	"4 S	" 148-152	571665	1124.21	15.9	93.0A
"	"5 P	" 148-152	571665	1124.21	15.9	93.0A
"	"5 S	" 153-157	572446	1124.48	16.2	116.7A
"	"6 S	" 153-157	572446	1124.48	16.2	116.7A
TOTAL			4056945	7961.80	16.0	95.99A

PASSENGER ACCOMMODATIONS

	CABIN CLASS	TOURIST CLASS	THIRD CLASS	TOTAL
UPPER	50	31	82	163
A	2	41	41	84
B	4	41	41	86
C	95	21	84	200
D	51	25	84	160
TOTAL	150	159	332	641

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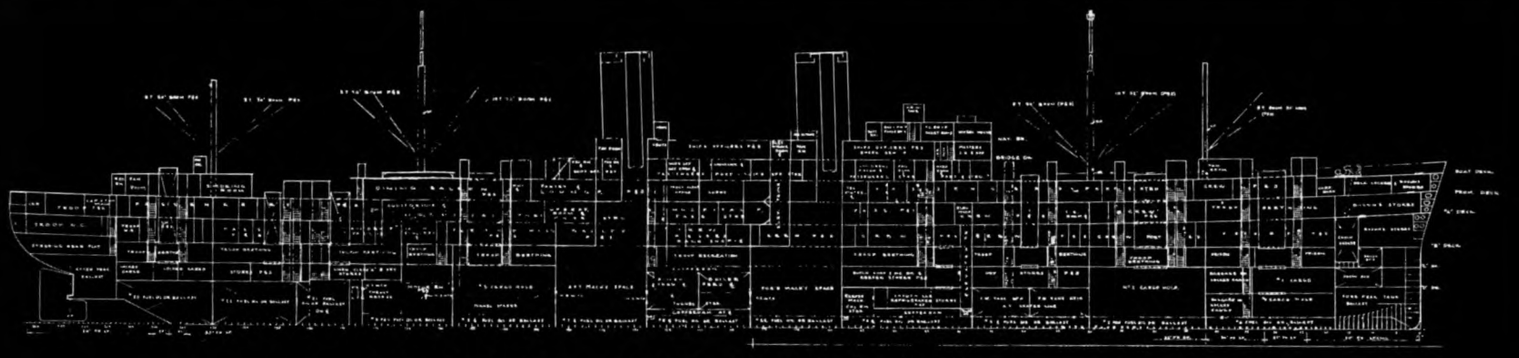

P2-SE2-R1 U.S.A.T. Admiral Class

DIMENSIONS & DATA

BUILDER - BETHLEHEM STEEL CO SHIPBUILDING DIV
U S M C TYPE P2-SE2-R1

LENGTH OVERALL	608'-11"
LENGTH BETWEEN PERPENDICULARS	573'-0"
LENGTH AT D.W.L. (29'-0")	590'-0"
BREADTH MOLDED	75'-6"
DEPTH MOLDED TO PROMENADE DK (AT SIDE)	32'-6"
"A" DK	43'-6"
"B" DK	34'-6"
"C" DK	26'-0"

BOILERS - COMBUSTION ENG'G CO (DESIGN) 675# PRESSURE
MAIN TURBO GENERATORS - G.E. (2) - TOTAL S.H.P. 18,000
AUX ELECTRIC " - G.E. (4) 200 KW - 240 DC, (8) 500 KW - 440 A.C.
PROPELLERS (2) - SOLID 3 BLADES, 18'-3" DIA, 19.44' PITCH
SPEED - DESIGNED 20.8 KNOTS
REFRIGERATING PLANT - FREON FRICK CAPACITY 248 TONS

BOOMS - (10) 5 TON, (4) 10 TON
FUEL CONSUMPTION (ESTIMATED) 850 BBLS/DAY
MAKE-UP FEED (ESTIMATED) 30 TONS/DAY
EST CRUISING RADIUS BASED ON FUEL CONSUMPTION -
30 DAYS OR 14,500 N MILES
EST CRUISING RADIUS BASED ON FRESH WATER TANKAGE -
(CONSUMPTION 150 TONS/DAY) - 11 DAYS
EST CRUISING RADIUS BASED ON DRY STORES - 60 DAYS
EST CRUISING RADIUS BASED ON REFRIG STORES - 60 DAYS
BREADTH EXTREME (AT DOCKING BRIDGE)
GROSS TONNAGE - U.S. -
NET TONNAGE - U.S. -
HEIGHT (KEEL TO TOP OF MAST)

DRY CARGO

LOCATION OF C.G. (FT) ABV. B.L.	FROM ℄	COMPARTMENT	BALE CU. FT.
9.2	238.7 F	HOLD # 1 - DBL. BOT TO "D" DECK - FR 18-34	3,700
19.7	238.7 F	HOLD # 1 - "D" DECK TO "C" DECK FR 18-34	5,250
15.8	177.4 F	HOLD # 2 - DBL BOT TO "C" DECK - FR 42-60	36,735
38.9	180.1 F	TRUNKED HATCH # 2 - "B" DECK TO "A" DECK - FR 48-53	3,030
48.7	180.1 F	- "A" DECK TO PROM DECK - FR 48-53	2,700
58.5	180.1 F	PROM DK TO BOAT DK - FR 48-53	3,120
17.7	32.7 A	HOLD # 5 - DBL BOT TO "C" DECK - FR 142-158	49,200
		TOTAL	103,733

BAGGAGE OR LOCKED CARGO

LOCATION OF C.G. (FT) ABV. B.L.	FROM ℄	COMPARTMENT	CU. FT
9.2	214.0 F	HOLD FR 34-42	3,100
19.3	213.6 F	"D" DECK FR 34-42	9,350
21.5	236.2 A	"D" DECK FR 195-213	1,800
		TOTAL	14,250

FUEL OIL OR SALT WATER

LOCATION OF C.G. (FT) ABV. B.L.	FROM ℄	COMPARTMENT		FUEL OIL BARRELS	FUEL OIL TONS	S.W. TONS @ 35°
15.5	233.7 F	FORE PEAK TANK	SIDE TO FR 18	—	—	182.80
2.8	227.3	DBL BOTTOM TANK # 1	FR 18-42	626.9	94.55	103.69
2.8	177.1	" #2P	42-60	555.7	83.81	91.91
2.8	177.1	" #2S	42-60	555.7	83.81	91.91
2.5	129.7	" #3℄	60-78	1020.8	153.95	168.83
6.4	128.0	" #3P (INCL SIDE TANK TO "D" @)	60-78	625.4	94.31	103.43
6.4	128.0	" #3S (" " " ")	60-78	625.4	94.31	103.43
2.5	77.7	" #4℄	FR 78-98	1120.0	168.90	185.23
2.8	75.4	" #4P	78-98	665.0	100.29	109.98
2.9	75.4	" #4S	78-98	665.0	100.29	109.98
2.5	30.8	" #5℄	98-112	798.6	120.44	132.09
2.8	30.5	" #5P	98-112	599.1	90.35	99.09
2.8	30.6	" #5S	98-112	599.1	90.35	99.09
2.5	10.6 A	" #6℄	112-128	901.6	135.97	149.11
2.8	10.3 A	" #6P	112-128	719.0	108.43	118.92
2.8	10.3 A	" #6S	112-128	719.0	108.43	118.92
14.1	0.4 F	FO SETTLING TANK #4P	112-120	670.5	101.11	—
14.1	0.4 F	" #4S	112-120	670.5	101.11	—
14.1	21.4 A	" #7P	120-128	670.5	101.11	—
14.1	21.4 A	" #7S	120-128	670.5	101.11	—
14.0	0.5 F	FO DEEP TANK #1S	112-120 (OVERFLOW)	714.7	107.78	—
14.1	0.5 F	" #1S	112-120 (")	1076.9	162.33	—
14.1	21.5 A	" #1P	120-128	1074.0	161.97	—
14.1	21.5 A	" #1S	120-128	1074.0	161.97	—
2.5	51.8	DBL BOTTOM TANK #7℄	128-142	797.1	120.52	132.17
2.9	51.0	" #7P	128-142	564.4	85.11	93.34
2.9	51.0	" #7S	128-142	564.4	85.11	93.34
2.5	92.9	" #8℄	142-158	912.6	137.65	150.94
3.0	90.1	" #8P	142-158	415.0	62.58	68.63
3.0	90.1	" #8S	142-158	415.0	62.58	68.63
3.2	132.4	" #9P	158-172	498.0	73.60	80.71
3.1	132.4	" #9S	158-172	498.8	73.42	80.52
9.7	166.9	DEEP TANK #21	174-182	1062.1	160.17	175.66
11.3	205.3	" #22	182-195	1955.7	294.94	323.46
12.7	231.2	" #23	195-213	1021.5	154.07	168.94
25.2	272.04	AFTER PEAK TANK	213 TO STERN			90.00
			TOTAL	26102.0	3936.41	3999.25

FRESH WATER

LOCATION OF C.G. (FT) ABV. B.L.	FROM ℄	COMPARTMENT		GALLONS	TONS @ 36°
11.0	42.1 F	DEEP TANK (WASH WATER) #10	FR 60-69	84754	203.33
11.0	117.4	" #11℄	69-78	84754	203.33
11.4	128.0	" #12P	60-78	86122	206.92
11.9	128.0	" #12S	60-78	86122	206.92
15.5	0.5	(POTABLE WATER) #13P	117-120	26090	62.62
16.3	0.5	" #13S	112-120	20355	73.59
15.5	21.5 A	" #16P	120-128	26098	62.62
16.3	21.5	" #16S	120-128	21170	78.62
17.8	125.4	(WASH WATER) #19P	158-166	88234	123.42
17.8	125.4	" #19S	158-166	88234	123.42
14.0	154.9	" #20P	166-180	85840	133.17
14.0	154.9	" #20S	166-180	85840	133.17
		(WASH WATER) TOTAL		859940	1336.68
		(POTABLE WATER) TOTAL		99719	348.05
		GRAND TOTAL		453659	1684.73

STEWARD'S STORES

LOCATION OF C.G. (FT) ABV. B.L.	FROM ℄	COMPARTMENT		BALE CU. FT.
20.7	129.7 F	STWD'S DRY STORES	"D" DK FR 66-78	16,900
21.7	144.7 A	CLEAN LINEN	166-171½ (S)	3,800
21.7	144.7	SOILED LINEN	166-171½ (P)	3,800
21.7	166.4	DRY STORES	FR 171½-180 (P)	3,300
21.7	166.4	CLASS "A" STORES	171½-180 (S)	3,300
21.2	189.2	CLASS "A" STORES	180-189 (S)	2,500
11.9	78.8 F	POTATO STOWAGE HOLD	84-91 (S)	756
		TOTAL		34,356

MISCELLANEOUS STORES

LOCATION OF C.G. (FT) ABV. B.L.	FROM ℄	COMPARTMENT		BALE CU. FT
21.2	189.2 A	PX STORES	"D" DECK FR 180-189 (P)	2,500
21.2	209.9 A	PX STORES	189-195 (P)	2,500
21.2	211.2 A	SPECIAL SERVICE STORES	189-195 (S)	1,200
21.2	209.9 A	MEDICAL STORES	189-195 (S)	1,650
		TOTAL		7,850

REFRIGERATED STORES

LOCATION OF C.G. (FT) ABV. B.L.	FROM ℄	COMPARTMENT		CU FT
12.6	85.4 F	STWD'S CHILL - FRUIT & VEGETABLES HOLD	FR 78-91 (P)	5,896
12.5	83.1	STWD'S CHILL - FRUIT & VEGETABLES	78-93 (S)	1,233
21.4	84.1	STWD'S FREEZER - MEAT "D" DK	78-91 (P)	1,439
21.3	97.8	" - FISH	78-85 (P)	857
21.3	92.3	" - DAIRY	78-83 (S)	2,811
21.3	85.8	THAW ROOM	83-87 (P)	783
21.3	68.1	STWD'S FREEZER - MILK	87-98 (S)	2,869
21.3	60.1	" - MEAT	91-98 (P)	3,859
21.3	59.6	" - ICE CREAM	91-98 (S)	990
		TOTAL		20,737

NOTE - CAPACITIES OF REFRIG SPACES ARE TO INSIDE OF BATTENS, COILS, GRATINGS, ETC.

NOTES -
ALL L.C.G.'S ARE TAKEN FROM THE D.W.L. MIDSHIP POINT, 6' AFT FR 116
OIL TANK CAPACITIES ARE FOR 97% FULL TANKS.
WATER TANK CAPACITIES ARE FOR 100% FULL TANKS.

FIXED BALLAST

LOCATION OF C.G. (FT) ABV. B.L.	FROM ℄	COMPARTMENT	TYPE	
8.25	93 A	HOLD # 5	TANNING STOWAGE	675
18.0	236.9 A	AFTER PEAK TANK	PIG IRON	150
		TOTAL		825

DIESEL OIL

LOCATION OF C.G. (FT) ABV. B.L.	FROM ℄	COMPARTMENT	BARRELS	TONS
18.0	0.5 F	DIESEL OIL TANK - PORT FR 112-120	3578	478.2

ACCOMMODATIONS

DECK	BOAT DECK	PROMENADE DECK	"A" DECK	"B" DECK	"C" DECK (INCL 48 BERTHS IN PRS. GUARD RM.)	TOTALS
PASSENGER BERTHS	41	106	267	84	498	1242
TROOP BERTHS						1242

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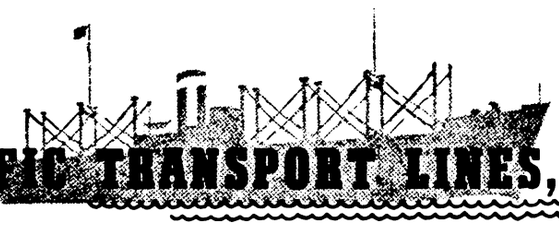

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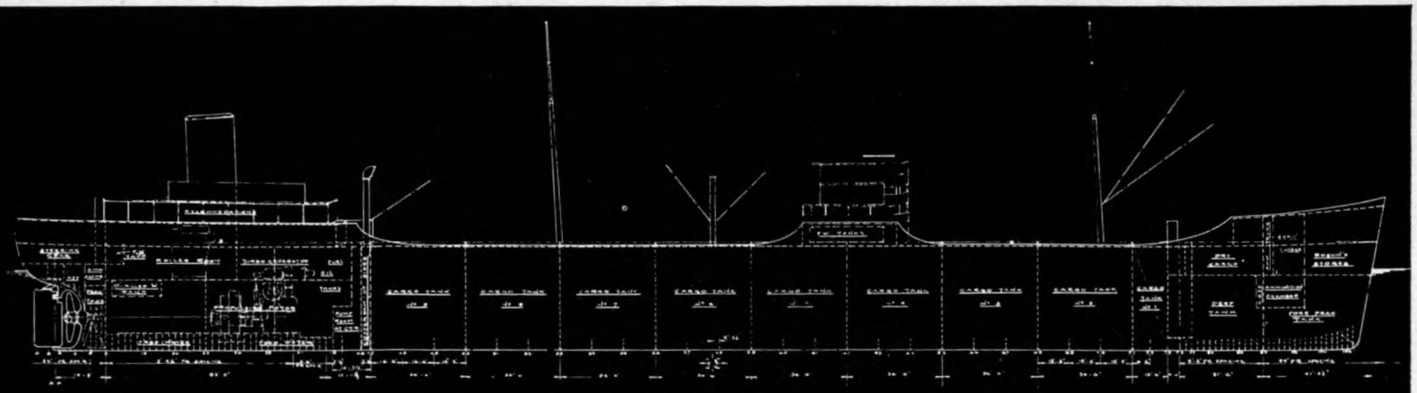


TYPICAL T2 TANKER

Length, overall	523' 6"
Beam, moulded	68'
Draft, loaded	30' 1/4"
Gross tonnage	10,448
Deadweight tonnage	16,613

Machinery	TURBO-ELECTRIC
Horsepower, shaft	6000
Speed, knots	14.5
Cruising range, miles	12,600
Crew, approximately	44

MAIN CARGO TANKS

TANK No	LOCATION	GALLONS	BARRELS(42G)
2	FR°68 - 71	391589.9	9323.57
3	65 - 68	391928.8	9331.64
4	62 - 65	391885.6	9330.61
5	59 - 62	391473.5	9320.80
6	56 - 59	391687.9	9325.90
7	53 - 56	391329.3	9317.36
8	50 - 53	391455.0	9320.36
9	47 - 50	385096.8	9168.97
	TOTAL	3126446.8	74439.28

SIDE CARGO TANKS

TANK N°	LOCATION	GALLONS	BARRELS(42G)
1 - P	FR°71 - 72	106922.8	2543.40
1 - S	71 - 72	106425.3	2533.94
2 P	68 - 71	130736.0	3112.76
2 S	68 - 71	130736.0	3112.76
3 P	65 - 68	163721.6	3898.13
3 S	65 - 68	163721.6	3898.13
4 P	62 - 65	169491.7	4035.52
4 S	62 - 65	169491.7	4035.52
5 P	59 - 62	170010.3	4047.86
5 S	59 - 62	170010.3	4047.86
6 P	56 - 59	170010.3	4047.86
6 S	56 - 59	170010.3	4047.86
7 P	53 - 56	169901.5	4045.27
7 S	53 - 56	169901.5	4045.27
8 P	50 - 53	167689.3	3992.60
8 S	50 - 53	167689.3	3992.60
9 P	47 - 50	152916.8	3640.88
9 S	47 - 50	152916.8	3640.88
	TOTAL	2802193.1	66719.10
	TOTAL CARGO	5928649.9	141158.3

DRY CARGO

2ND DECK	FR° 76-83	CU. FT.
	TOTAL DRY CARGO	15203

FRESH WATER TANKS

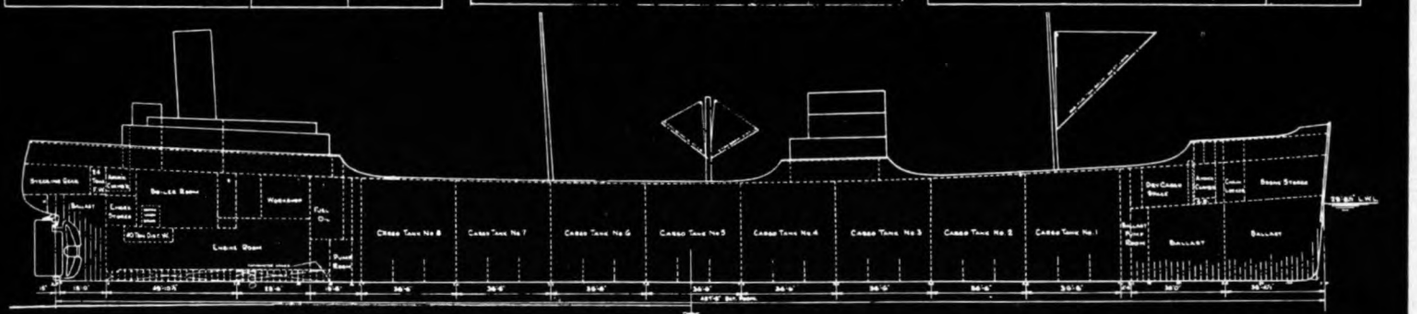
TANK	LOCATION	TONS F.W
FEED WATER:		
DISTILLED WATER	FR.° 10-18 ENG RM	36.39
INNER BOTTOM T.	FR° 11-27 PORT	41.35
Do.	FR° 11-24 STBD	31.41
Do	FR° 27-44 PORT	77.12
Do	FR° 27-44 STBD	79.52
	TOTAL FEED WATER	265.79
DRINKING WATER		
F.W. TANK	STEERG CR FLAT FR° 9-12	28.62
Do	UNDER BRIDGE DK. P	35.37
Do	UNDER BRIDGE DK. S.	35.37
	TOTAL DRINKING WATER	99.36

FUEL OIL TANKS

TANK N°	LOCATION	GALLONS	BARRELS (42G)
WING TANK	FR° 36-46 P	104687.5	2497.34
WING TANK	FR° 36-46 S	104687.5	2497.34
DEEP TANK	FR° 75-89 S.	99485.0	2368.69
DEEP TANK	FR° 75-89 P.	99603.4	2371.51
	TOTAL FUEL	408463.4	9735.28

BALLAST TANKS AND COFFERDAMS

TANK	LOCATION	TONS S.W.
FORE PEAK	FR° 89 - FOR'D	314.23
DEEP TANK	FR. ° 75-89 P	380.17
DEEP TANK	FR ° 75-89 S.	364.58
COFFERDAM	FR ° 73-75 P	66.47
COFFERDAM	FR ° 73-75 S	66.47
COFFERDAM	FR.° 46-47 P	57.11
COFFERDAM	FR ° 46-47 S	57.11
AFT PEAK	FR ° 0- D	56.12
	TOTAL BALLAST	1362.26



T3 TANKER

PARTICULARS

LENGTH OVERALL	501'-8"
LENGTH BETWEEN PERPENDICULARS	487'-6"
BEAM MOLDED	68'-0"
DEPTH MOLDED	37'-0"
DRAFT MOLDED	29'-8¼"
DRAFT FREEBOARD TO UNDERSIDE KEEL	30'-0¼"

TONNAGES

GROSS	9879.22
NET	5870.00
UNDERDECK	8790.56
PANAMA GROSS	10615.99
PANAMA NET	7037.81
SUEZ GROSS	10615.99
SUEZ NET	8088.09

BALLAST TANKS

TANK	LOCATION	TONS
FORE PEAK	FR.88-STEM	443.60
BALLAST PORT	FRS. 72-88	596.42
BALLAST-STBD	FRS. 72-88	491.04
AFT PEAK	FRS. 1-9	91.40
TOTAL BALLAST		1622.46

FEED WATER TANKS

TANK	LOCATION	TONS
FEED WATER-P	FRS 11-29 D.B	32.69
FEED WATER-S	FRS 11-29 D.B	32.69
FEED WATER-P	FRS. 29-44 D.B	49.52
FEED WATER-S	FRS. 29-44 D.B	49.52
TOTAL FEED WATER		164.42

FRESH WATER TANKS

TANK	LOCATION	TONS
FRESH WATER	FRS 6-9	25.55
FRESH WATER	UNDER BRIDGE-S	39.65
FRESH WATER	UNDER BRIDGE-P	39.65
TOTAL FRESH WATER		104.63

MISCELLANEOUS TANKS

TANK	LOCATION	TONS (FW)
DISTILLED WATER	FRS 12-20	38.70

DRY CARGO SPACE

2 ND. DECK	FRS 72-78	GRAIN	27,155 CU FT
2 ND. DECK	FRS 72-78	BALE	24,722 CU FT

TANK CAPACITIES

CENTER CARGO TANKS

TANK	LOCATION	GALLONS	BARRELS
N° 1	FRS. 68-71	394,758	9399.01
N° 2	FRS. 65-68	382,430	9105.47
N° 3	FRS - 62-65	370,349	8817.83
N° 4	FRS - 59-62	362,160	8622.86
N° 5	FRS - 56-59	358,384	8537.72
N° 6	FRS - 53-56	359,148	8551.14
N° 7	FRS - 50-53	364,054	8667.96
N° 8	FRS - 47-50	376,132	8955.52
TOTAL CENTER TANKS		2,967,615	70657.51

WING CARGO TANKS

TANK	LOCATION	GALLONS	BARRELS
N°1 PORT	FRS 68-71	155,580	3713.82
N°1 STBD	FRS. 68-71	155,980	3713.82
N°2 PORT	FRS 65-68	173,805	4138.22
N°2 STBD	FRS 65-68	173,805	4138.22
N°3 PORT	FRS 62-65	171,836	4091.34
N°3 STBD	FRS 62-65	171,836	4091.34
N°4 PORT	FRS 59-62	168,126	4003.02
N°4 STBD	FRS 59-62	168,126	4003.02
N°5 PORT	FRS 56-59	166,389	3961.65
N°5 STBD	FRS 56-59	166,389	3961.65
N°6 PORT	FRS 53-56	166,625	3967.28
N°6 STBD	FRS 53-56	166,625	3967.28
N°7 PORT	FRS 50-53	166,351	3960.27
N°7 STBD	FRS 50-53	166,351	3960.27
N°8 PORT	FRS 47-50	157,159	3741.89
N°8 STBD	FRS. 47-50	157,159	3741.89
TOTAL WING TANKS		2,652,502	63,154.98
TOTAL WING & CENTER		5,620,117	133,812.49

FUEL OIL TANKS

TANK	LOCATION	GALLONS	BARRELS
CENTER	FRS. 42-46	87,785	2090.29
WING-P	FRS. 42-46	57,109	1359.68
WING-S	FRS. 42-46	57,109	1359.68
TOTAL FUEL OIL		202,013	4809.65

COFFERDAMS

TANK	LOCATION	TONS (S.W.)
FWD C.D PORT	FRS 71-72	12.35
FWD C.D. STBD	FRS 71-72	68.32
AFT C.D PORT	FRS. 46-47	45.41
AFT C.D STBD	FRS 46-47	45.41
TOTAL COFFERDAMS		280.49

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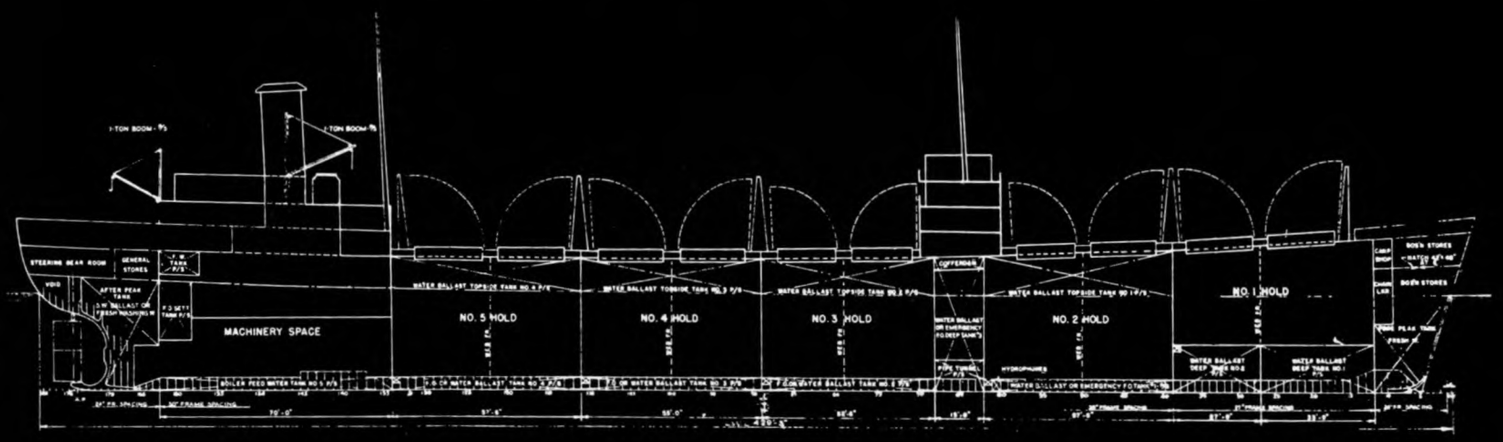

DESIGN NO. EC2-S-AWI
COLLIER

FUEL OIL

TANK		GALS.	TONS@37.23 C.F.
FUEL OIL TANK	NO.2 P	37316	134
" " "	NO.2 S	37316	134
" " "	NO.3 P	38709	139
" " "	NO.3 S	38709	139
" " "	NO.4 P	30911	111
" " "	NO.4 S	30911	111
" " SETTLING TANK	P	15038	54
" " " "	S	15038	54
TOTAL FUEL OIL		243948	876
EMERGENCY F.O. TANK	NO.1-P	37873	136
" " " "	1-S	37316	134
EMERGENCY F.O. DEEP TANK	NO.3	225848	811
TOTAL EMERGENCY F.O.		301037	1081

WATER BALLAST

TANK		CU. FT.	TONS@35 C.F.
FORE PEAK		4585	131
WATER BALLAST	NO.1 P	5154	147
" "	NO.1 S	5113	146
" "	NO.2 P	5074	145
" "	NO.2 S	5074	145
" "	NO.3 P	5261	150
" "	NO.3 S	5261	150
" "	NO.4 P	4203	120
" "	NO.4 S	4203	120
AFTER PEAK		5355	153
DEEP TANKS	NO.1 P	5810	166
" "	NO.1 S	5810	166
" "	NO.2 P	7875	225
" "	NO.2 S	7875	225
" "	NO.3	30695	877
TOPSIDE BALLAST			
TANK	NO.1 P	5530	158
" "	NO.1 S	5530	158
" "	NO.2 P	4410	126
" "	NO.2 S	4410	126
" "	NO.3 P	4609	132
" "	NO.3 S	4609	132
" "	NO.4 P	4723	135
" "	NO.4 S	4723	135
TOTAL		145892	4168

STORES

STOREROOM	CU.FT.
STOREROOM (POOP DECK)	1107
GENERAL STORES ON FLAT AT 2ND DK. LEVEL	4305
BOS'N STORES ON 2ND DK. F.P. TO FR 12	2938
BOS'N STORES ON FLAT BET. 2ND. & UPPER DK.	3492
DRY STORES	1600
LINEN LOCKERS	900
BONDED STORES	252
REFRIGERATED STORES	
MEAT	1110
FISH	335
VEGETABLES	989
DAIRY	185
HANDLING ROOM	364

CARGO

COMPARTMENT		CU. FT.	COAL CAP.(TONS)
HOLD NO.1		84611	1880
HOLD NO.2		103133	2292
HOLD NO.3		91300	2029
HOLD NO.4		95491	2122
HOLD NO.5		98264	2184
(45 CU FT./TON)	TOTAL	472799	10507

FRESH WATER

TANK		GALS.	TONS@36 C.F.
BOILER FEED TANK	NO.5 P	15349	57
" " "	NO.5 S	15349	57
FRESH WATER TANK	P	10233	38
" " "	S	10233	38
FORE PEAK		34198	127
AFTER PEAK		40123	149
	TOTAL	125485	466

EQUIPMENT & DEFENSE INSTALLATIONS	
LIFE RAFTS-4	12.1
DEGAUSSING	8.0
TOTAL	20.1

PRINCIPAL DIMENSIONS

L.O.A.	443'-7½"
L.B.P. (25'-3¼" W.L.)	416'-0"
BREADTH, MLD.	56'-10¾"
BREADTH, EXTREME	57'-0"
DEPTH TO UPPER DECK, MLD.	37'-4"
DRAFT (INTERNATIONAL)	28'-7⅛"
DRAFT (COASTWISE EMERGENCY)	29'-3⅜"

LIGHTWEIGHT DRAFT 8'-5"

PEACETIME CONDITIONS

LIGHTSHIP WEIGHT	3683	TONS
DEADWEIGHT	11047	TONS

WARTIME CONDITIONS

LIGHTSHIP WEIGHT 3703 TONS
INCLUDING 20 TONS DEFENSE INSTALLATION
DEADWEIGHT 11027 TONS

CAPACITIES & TYPE OF WINCHES
4 - 7"x12" DBL GEARED WINCHES

HEIGHTS OF MASTS (VERTICAL DIMENSIONS)
MAIN MAST - FROM POOP DECK 65'-0"
FOREMAST - FROM NAVIGATING BRIDGE DECK 49'-11"

ENGINE
DIRECT ACTING CONDENSING THREE CYLINDER TRIPLE EXPANSION ENGINE DEVELOPING 2500 I.H.P. AT 76 R.P.M.

BOILERS
TWO MAIN BOILERS OF THE CROSS DRUM SECTIONAL SINUOUS HEADER STRAIGHT TUBE TYPE FITTED WITH SUPERHEATERS, BURNING BUNKER "C" FUEL OIL

CAPACITIES: FUEL OIL - 98% FULL
WATER BALLAST - 100% FULL

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FOR

Efficiency
Dispatch
Dependability

CAPTAIN NATHAN McKENZIE, president of Tanker Loaders Corporation (Center) receiving the award of the National Safety Council from JAMES BISHOP, president of the body's Greater Los Angeles Chapter (Left). On the right is REAR ADMIRAL FRANK D. HIGBEE, USCG (Ret.) warden of the Port of Los Angeles and vice president of the Los Angeles Chapter.

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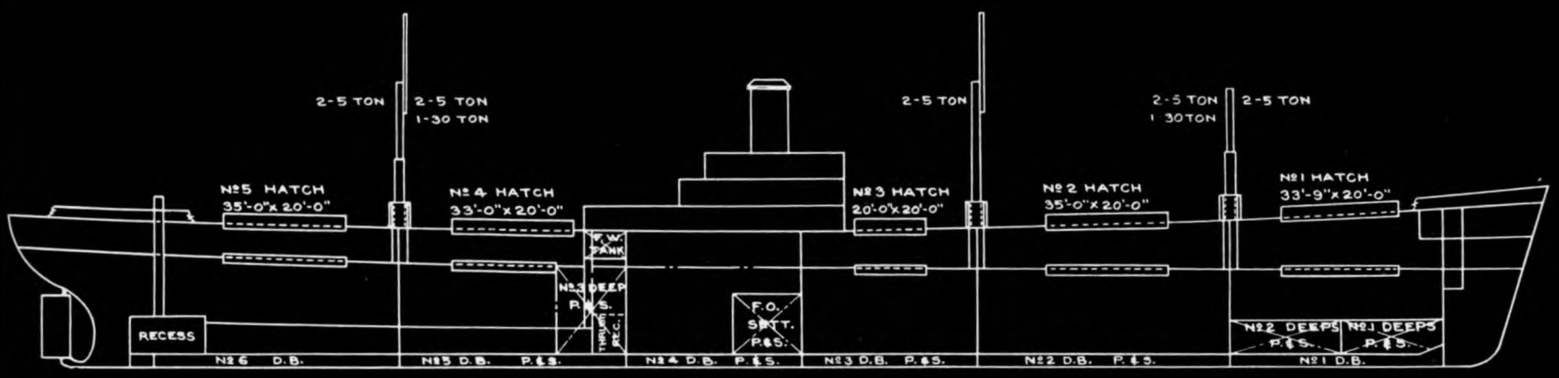

EC-2 TYPE (LIBERTY) VESSELS CALIFORNIA SHIPBLDG. CORP.

LENGTH O.A.	441'-6"	GROSS TONNAGE (APPROX.)	7180
LENGTH B.P.	416'-0	NET TONNAGE (APPROX.)	4370
BREADTH-MLD.	56'-10¾"	DEADWEIGHT TONNAGE (TOTAL)	10807
BREADTH-EXTREME	57'-0"	DISPLACEMENT TONNAGE @ 27'-8 15/16"	14230
DEPTH TO UPPER DECK-MLD.	37'-4"	DISPLACEMENT TONNAGE @ 7'-10½"	3423
DEPTH TO 2ND DECK-MLD.	28'-7"		
DRAFT - LOADED	27'-8 15/16"	PASSENGERS	NONE
DRAFT - LIGHT	7'-10½"		

CARGO CAPACITIES			
HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	41257	36083
1	TWEEN DECK	42924	39322
2	HOLD	98860	92008
2	TWEEN DECK	46744	42630
3	HOLD	68459	59793
3	TWEEN DECK	27970	23904
4	HOLD	58041	52574
4	TWEEN DECK	35277	29689
5	HOLD	58620	51571
5	TWEEN DECK	34570	30864
1	№1 DEEP PORT	3639	2729
1	№1 DEEP STBD.	3639	3004
1	№2 DEEP PORT	7473	5294
1	№2 DEEP STBD.	7473	5578
4	№3 DEEP PORT	13674	12506
4	№3 DEEP STBD.	13188	12024
	TOTALS	562608	499573
	TOTALS LESS №3 DEEPS	535746	475043

SHIP'S STORAGE SPACE		
DECK	COMPARTMENT	CU. FT.
UPPER	BOS'N'S. STORES FWD.	3034
SECOND	" " "	3492
"	CABIN "	4329
"	LINEN LOCKER	585
BOAT	BONDED STORES	186
	TOTAL	11626

SHIP'S REFRIGERATED STORES	
MEAT	801 C.F.
FISH	173 "
VEGETABLES	768 "
DAIRY	176 "
TOTAL	1918 "

FUEL CONSUMPTION @ LOADED DRAFT			
SPEED	BBLS/24HR.	RANGE DAYS	
11	170	72	MAX. SPEED
10	150	81	CRUISING "
9	130	94	
8	110	111	
6.5	80	153	

PORT CONSUMPTION IDLE 20 BBLS/DAY
PORT CONSUMPTION CARGO 35 " / "

TANK CAPACITIES 100%							
FRAME	TANK	CAP. CU. FT.	BBLS. FUEL	TONS FUEL	TONS S.W.	TONS F.W.	
	FORE PEAK	4845			138		
	№1 D.B.	5045	896	133	144		
	№2 D.B. PORT	6041	1063	159	173		
	№2 D.B. STBD.	6041	1063	159	173		
	№3 D.B. PORT	4453	783	117	127		
	№3 D.B. STBD.	4453	783	117	127		
	№4 D.B. PORT	2412			69	67.2	
	№4 D.B. STBD.	2412			69	67.2	
	№5 D.B. PORT	4485	782	118	128		
	№5 D.B. STBD.	4485	782	118	128		
	№6 D.B.	4191	733	110	120		
	AFTER PEAK	5318			152		
	№1 DEEP PORT	3983			114		
	№1 DEEP STBD.	3983			114		
	№2 DEEP PORT	7427			212		
	№2 DEEP STBD.	7427			212		
	№3 DEEP PORT	13583	2420	358	388		
	№3 DEEP STBD.	13101	2320	345	374		
	FRESH WATER PORT	987			28	27.0	
	" " STBD.	987			28	27.0	
	SETTLING PORT	1861	335	50			
	" STBD.	1861	335	50			
	TOTALS		12295	1834	3018	188.4	
	TOTAL LESS DEEPS		7755				

MANNING AUTHORITY					
DECK		ENGINE		STEWARDS - PURSER	
MASTER	1	CHIEF ENGINEER	1	CHIEF STEWARD	1
CHIEF OFFICER	1	1ST ASST. ENG'R.	1	CHIEF COOK	1
2ND OFFICER	1	2ND ASST. ENG'R.	1	2ND COOK & BAKER	1
3RD OFFICER	1	3RD ASST. ENG'R.	1	ASST. COOK	1
CADETS	2	CADETS	2	MESSMEN	3
RADIO OPERATOR	1	DECK ENG'R.	1	UTILITY MESSMEN	2
CARPENTER	1	OILERS	3	TOTAL	9
BOS'N. A.B.	1	FIREMEN-WATERTENDERS	3		
A.B. SEAMEN	6	WIPERS	2	PURSER	1
O. SEAMEN	3	TOTAL	15		
TOTAL	18				
				TOTAL CREW	43

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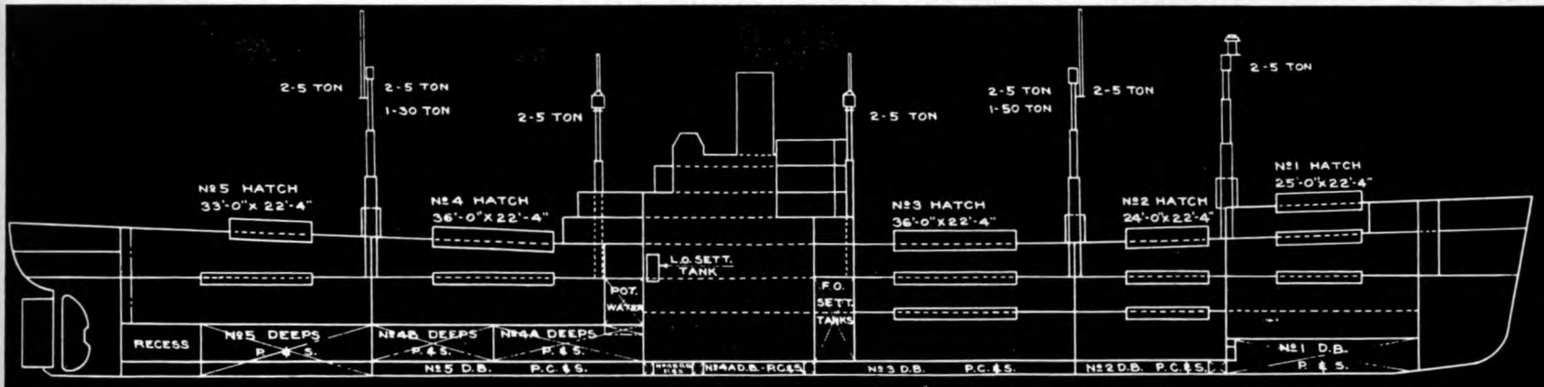

VC2-S-AP3 TYPE (VICTORY) VESSELS

LENGTH O.A.	455'-3"	GROSS TONNAGE (APPROX.)	7200
LENGTH B.P.	436'-6"	NET TONNAGE (APPROX.)	4300
BREADTH - MLD.	62'-0"	DEADWEIGHT TONNAGE (TOTAL)	10600
BREADTH - EXTREME	62'-1⅛"	DISPLACEMENT TONNAGE @ ~~28'-0 13/16"~~ 29' 0"	+4900 15500
DEPTH TO MAIN DECK - MLD.	38'-0"	DISPLACEMENT TONNAGE	
DRAFT - LOADED	28'-0 13/16"		
DRAFT - LIGHT		PASSENGERS	

CARGO CAPACITIES			
HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	32690	27910
1	UPPER TWEEN DECK	28100	23785
1	FOCSLE TWEEN DECK	20925	18730
2	HOLD	33095	27945
2	LOWER TWEEN DECK	25965	21805
2	UPPER TWEEN DECK	30310	27010
3	HOLD	62340	52840
3	LOWER TWEEN DECK	44755	37795
3	UPPER TWEEN DECK	50905	45555
4	HOLD	58675	51100
4	UPPER TWEEN DECK	54405	49200
5	HOLD	32385	25905
5	UPPER TWEEN DECK	49190	43630
	TOTALS	523740	453210

SHIP'S STORAGE SPACE		
DECK	COMPARTMENT	CU. FT.
FOCSLE	PAINT LOCKER	154
"	LAMP LOCKER	141
MAIN	BOSN'S STORES	2301
MAIN-FWD	" " IN WAY OF MAST	325
" -AFT	" " IN WAY OF MAST	325
SECOND	" "	2080
"	DRY STORES	2972
"	STEWARD'S STORES	1314
AFT FLAT	ROPE LOCKER (35'-6")	345
MACH. "	ENGINEER'S STORES	1080
	TOTAL	11037

SHIP'S REFRIGERATED STORES		
	BOX	CU. FT.
	VEGETABLES	2004
	HANDLING ROOM	604
	FISH	269
	DAIRY	371
	MEAT	1347
	TOTAL	4595

LUBRICATING & DIESEL OIL						
TANKS	FRS.	C. OF G. FROM ℄	C. OF G. FROM ℄	OIL 98% FULL GALLONS	BARRELS	TONS
LUB. OIL STORAGE-S	94-95	36.52	31.28	1777	42	6.4
LUB. OIL SETTLG.-P.	94-95	36.52	31.28	1772	42	6.4
DIESEL OIL - P.	90-95	31.50	2.00	815	19.5	2.6
DIESEL OIL - S.	90-95	31.50	2.00	815	19.5	2.6
DIESEL OIL FOR DIESEL GENERATOR	101	57.10	51.86	90	2.0	.3
FUEL OIL FOR GALLEY RANGE	101-102	57.60	48.46	27	0.5	.1

TANK CAPACITIES		98%			100%	
FRAME	TANK	CAP. CU. FT.	BBLS. FUEL	TONS FUEL	TONS S.W.	TONS F.W.
14- 37	№1 D.B. - PORT		862.0	130.0	141.1	
14- 37	№1 D.B. - STBD.		862.0	130.0	141.1	
37- 52	№2 D.B. - PORT		246.5	37.2	40.4	
37- 52	№2 D.B. CENTER		600.5	90.5	98.3	
37- 52	№2 D.B. STBD.		246.5	37.2	40.4	
52- 78	№3 D.B. PORT		893.5	134.7	146.2	
52- 78	№3 D.B. CENTER		1066.0	160.8	174.5	
52- 78	№3 D.B. STBD.		893.5	134.7	146.2	
90- 95	№4B D.B. PORT		173.5	26.2	28.4	
90- 95	№4B D.B. STBD.		173.5	26.2	28.4	
95-122	№5 D.B. PORT		538.5	81.2	88.1	
95-122	№5 D.B. CENTER		1100.0	165.9	180.1	
95-122	№5 D.B. STBD.		538.5	81.2	88.1	
95-110	№4A DEEP PORT		2350.5	354.5	384.8	
95-110	№4A DEEP STBD.		2121.0	319.9	347.2	
110-122	№4B DEEP PORT		1577.0	237.8	258.1	
110-122	№4B DEEP STBD.		1407.0	212.2	230.3	
122-139	№5 DEEP PORT		1427.5	215.3	233.7	
122-139	№5 DEEP STBD.		1186.0	178.9	194.1	
14-FWD.	FORE PEAK				106.0	
147-AFT	AFTER PEAK				34.0	
74- 78	F.O. SETTLING PORT		423.5	63.9	69.3	
74- 78	F.O. SETTLING STBD.		426.5	64.3	69.8	
74- 78	DISTILLED WATER					21.2
79- 89	№4A D.B. PORT-RES. FEED					55.1
79- 89	№4A D.B. CENTER-RES. FEED					65.7
79- 89	№4A D.B. STBD.-RES. FEED					57.2
95- 99	POTABLE WATER-CENTER					95.7
	TOTALS		19113.5	2882.6	3068.6	294.9
	TOTALS LESS DEEPS		9044.5	1364.0	1620.4	

MANNING AUTHORITY					
DECK		ENGINE		STEWARDS	
CAPTAIN	1	CHIEF ENGINEER	1	CHIEF STEWARD	1
1ST MATE	1	1ST ASST. ENGR.	1	CHIEF COOK	1
2ND MATE	1	2ND ASST. ENGR.	1	2ND COOK	1
3RD MATE	1	3RD ASST. ENGR.	1	NIGHT COOK & BAKER	1
JR. 3RD MATE	1	JR. 3RD ASST. ENGR.	1	ASST. COOK	1
RADIO OPERATOR	1	CADETS	2	MESSMEN	4
CADETS	2	DECK ENGINEER	1	UTILITY MEN	2
CLERK TYPIST	1	OILERS	3	TOTAL	11
BOSN.	1	WIPERS	3	ARMED GUARD	
CARPENTER	1	FIREMEN	3	GUNNERY OFFICER	1
A.B. SEAMEN	6	SPARES	3	GUNNERS	24
ORDINARY SEAMEN	6	TOTAL	20	COMMUNICATIONS MEN	3
TOTAL	23			TOTAL	28
				TOTAL CREW	82

CRUISING RANGE AT FULL SPEED INCLUDING DEEP TANK FUEL SUPPLY 51 Days

GENERAL PARTICULARS

WINCHES
12 SINGLE SPEED 50 H.P. UNIT WINCHES AT 5 TON BOOMS
2 TWO SPEED 50 H.P. UNIT WINCHES AT 30 & 50 TON BOOMS

WINDLASS
HORIZONTAL SHAFT - 60 H.P. - TWO WARPING HEADS

CAPSTAN
1 VERTICAL SHAFT - 35 H.P.

ENGINE
CROSS-COMPOUND DOUBLE REDUCTION GEAR TURBINES - 6000 H.P. @ 100 R.P.M.

BOILERS
2 SECTIONAL HEADER-SINGLE PASS WATER TUBE BOILERS

PROPELLER
SOLID TYPE BRONZE 4 BLADE

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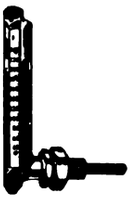

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Fire Brick Cements—"Botfield Ref. Co."
Flange Spreaders—"G & G"
Gauges—"Witt Gauge Co."
Gauges—"H. O. Trerice Co."
Gauge Glasses—"Corning Glass Co."
Gaskets—"Goetze Gasket Co."
Hose—"U.S. Rubber Co."
Insulation—"Ada-Stic"
Insulation, Brick—"Nedmac"

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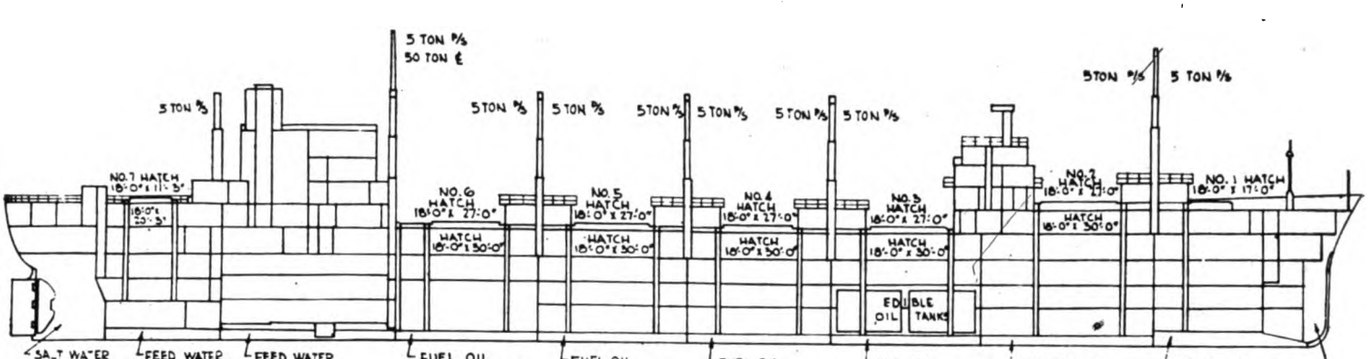

C4-S-A4 TYPE CARGO VESSELS

KAISER CO. INC., RICHMOND, CALIF.

LENGTH OVER-ALL	522'-10½"
LENGTH BTWN. PERP.	496'-0"
BREADTH - EXTREME	71'-8¼"
BREADTH - MOLDED	71'-6"
DEPTH, MLD. UPPER DK. AT SIDE	43'-6"
MEAN DRAFT, SUMMER FREEBOARD	10'-10"
DRAFT LOADED	32'-9 3/16"
DRAFT LIGHT	12'-1½"

GROSS TONNAGE	10,662.53
NET TONNAGE	7,637.00
DEADWEIGHT TONNAGE (TOTAL)	14,863.00
DISPLACEMENT TONNAGE @ 32'-9 3/16"	22,000.00
DISPLACEMENT TONNAGE @ 12'-1½"	7,137.00

PASSENGERS 2 RMS. OF 2 TOTAL 4
MAXIMUM TRIAL SPEED 21.9 KNOTS

CARGO CAPACITIES

HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	7495	5670
1	1ST. PLAT.	8252	6509
1	3RD. DECK	8806	7100
1	2ND. DECK	11156	8980
1	UPPER DK.	13191	10852
2	HOLD	36889	30906
2	1ST. PLAT.	29047	24598
2	3RD. DECK	29819	25738
2	2ND. DECK	32390	26276
2	UPPER DK.	21548	19312
3	3RD. DECK	32959	26052
3	2ND. DECK	33727	31928
4	HOLD	46184	39776
4	1ST. PLAT.	35026	30530
4	3RD. DECK	35026	30804
4	2ND. DECK	35489	32140
5	HOLD	46816	40690
5	1ST. PLAT.	35034	30256
5	3RD. DECK	35034	30544
5	2ND. DECK	35497	30622
6	HOLD	76412	65411
6	3RD. DECK	34899	31286
6	2ND. DECK	35280	31797
7	2ND. DECK	5464	4752
7	UPPER DK.	6402	6488
	TOTALS	727433	628847

TANK CAPACITIES 100%

FRAMES	TANK	CARGO FT.	BBLS. FUEL	TONS FUEL	TONS S.W.	TONS F.W.
13-32	NO.1 D.B.E. BTM. PORT	2429	432.4	65.2	69.5	
13-32	NO.1 " STBD.	2429	432.4	65.2	69.5	
37-58	NO.2 " " PORT	1962	349.4	52.6	56.2	
32-57	NO.2 " " ℄	7165	1276.5	192.4	204.8	
37-58	NO.2 " " STBD.	1962	349.8	52.6	56.2	
58-80	NO.3 " " PORT	4257	758.3	114.3	121.7	
58-79	NO.3 " " ℄	6321	1092.5	161.7	172.1	
58-80	NO.3 " " STBD.	4257	758.3	114.3	121.7	
80-102	NO.4 " " PORT	5229	927.6	139.8	148.8	
80-101	NO.4 " " ℄	6395	1095.2	165.7	174.1	
80-102	NO.4 " " STBD.	5229	927.6	139.8	148.8	
102-124	NO.5 " " PORT	5017	895.5	134.7	143.4	
102-123	NO.5 " " ℄	6083	1083.2	163.4	173.8	
102-124	NO.5 " " STBD.	5017	895.5	134.7	143.4	
124-146	NO.6 " " PORT	3251	578.8	87.3	92.9	
124-145	NO.6 " " ℄	6349	1077.0	162.4	172.9	
124-146	NO.6 " " STBD.	3251	578.5	87.3	92.9	
147-172	NO.7 " " PORT	5222				83.5
147-172	NO.7 " " STBD.	3283				51.2
172-186	NO.8 " " PORT	832				25.9
172-186	NO.8 " " STBD.	932				25.9
168-171	D.S. FILLED WATER PORT	241				6.7
168-171	DISTILLED WATER STBD.	241				6.7
154-159	DRINKING WATER PORT	275				4.4
155-159	DRINKING WATER STBD.	275				4.4
18 FWD.	FOREPEAK	2687			82.5	
192 AFT.	AFTERPEAK	5845			167.0	
172-178	F.O. SETTLING PORT	1362	247.7	36.6		
172-181	F.O. SETTLING STBD.	1411	251.4	37.8		
59-69	NO.1 EDIBLE OIL - FWD.	2169		590.1		612.0
70-79	NO.2 EDIBLE OIL - AFT	2167		592		604.0
59-69	HOTWELLS FWD.					
70-79	HOTWELLS AFT.					
159-164	L.O. SETTLING PORT	223	45.6	6.0		
159-162	L.O. STORAGE PORT	223	45.7	6.0		
150-152	DIESEL EMERG. GEN. ℄	44	8.5	1.2		
150-152	" GALLEY & COLD START	2010	38.3	5.4		
	TOTALS	145023	14097.1	3296.7	24123	1541.5

SHIP'S STORAGE SPACE

	COMPARTMENT	CU. FT.
2ND DECK UPPER	BOSN'S STORES	3560
"	DECK PAINT	960
"	ELEC. SHOP	940
"	LAMP ROOM	480
"	CARPENTER SHOP	1705
"	DRY STORES	1255
"	BOSN'S STORES	1215
2ND	" "	995
3RD	PAINT LKR. (ENG'RS)	550
3RD	BOSN'S STORES	345
	TOTAL	11795

SHIPS REFRIGERATED STORES

	SPACE	CU. FT.
DECK UPPER	THAWING RM.	575
"	VEGETABLES	975
"	MEAT	950
"	ICE	55
"	RES. MEAT & VEG.	420
	TOTAL	2725

REFRIGERATED CARGO

HOLD	SPACE	CU.FT. BALE
NO.7	1ST. PLAT P&S	3591
"	3RD. DK. FWD P&S	4259
"	3RD. DK AFT. P&S	5156
"	2ND. DK. PORT	5910
"	2ND. DK. STBD.	5777
"	UPPER DK. PORT	2517
"	UPPER DK. STBD.	5165
	TOTAL	32375

MANNING AUTHORITY

DECK		ENGINE		STEWARD	
CAPTAIN	1	CHIEF ENGINEER	1	STEWARD	1
1ST OFFICER	1	1ST ASS'T. ENG'R.	1	COOKS	2
2ND. OFFICER	1	2ND ASS'T. ENG'R.	1	MESSMEN	8
3RD. MATE	1	3RD. ASST. ENGR.	1		
JR. 3RD. OFFICER	1	JR. 3RD. ASS'T. ENG'R.	1		
CHIEF RADIO OPERATOR	1	JUNIOR ENGINEERS	3		
DECK CADET	1	ENGINEER CADET	1		
BOATSWAIN	1	CHIEF ELECTRICIAN	1		
CARPENTER	1	REFRIGERATOR ENG'R.	1		
SEAMEN	9	JR. REFR. ENG.	2		
MAINTENANCE MEN	5	ELECTRICIANS ASST.	1		
PURSER - PHARMACIST	1	OILERS	5		
		FIREMEN	3		
		WIPERS	5		
TOTAL	22	TOTAL	25	TOTAL	11

TOTAL CREW 56
PASSENGERS 4

FUEL CONSUMPTION @ LOADED DRAFT

SPEED	BBLS/24 HRS	RANGE DAYS	
18.5	480	29	MAX. SPEED
16.0	360	39	CRUISING SPEED
12.0	175	78	
9.0	160	86	
8.0	145	94	
6.5	130	105	

FUEL CAPACITY - 13696.5 BBLS.
PORT CONSUMPTION, IDLE 65 BBLS. PER 24 HRS.
PORT CONSUMPTION CARGO - 75 BBLS. PER 24 HRS.

GENERAL PARTICULARS

WINCHES

22 SINGLE SPEED ELECTRIC MOTOR DRIVEN CARGO WINCHES 50 HP FOR 5 TON BOOMS
2 TWO SPEED ELECTRIC MOTOR DRIVEN CARGO WINCHES 50 H.P. FOR 50 TON BOOM

ENGINE

GEARED TURBINE 9000 S.H.P.

BOILERS

2 WATER TUBE BOILERS FITTED WITH SUPERHEATER, AIR-HEATER, OIL BURNERS, DE SUPER-HEATER, FEED-WATER REGULATION, WATER GAUGE GLASS, FLANGE CONNECTIONS FOR REMOTE WATER LEVEL INDICATOR, SOOT BLOWERS & AIR HEATER BY-PASS DAMPER 745° SUPERHEAT - 41,000 LBS. STEAM PER HOUR.

PROPELLER

1 RIGHT HAND FOUR BLADED MANGANESE BRONZE PROPELLER - 21'-8" DIA. X 21.6G9

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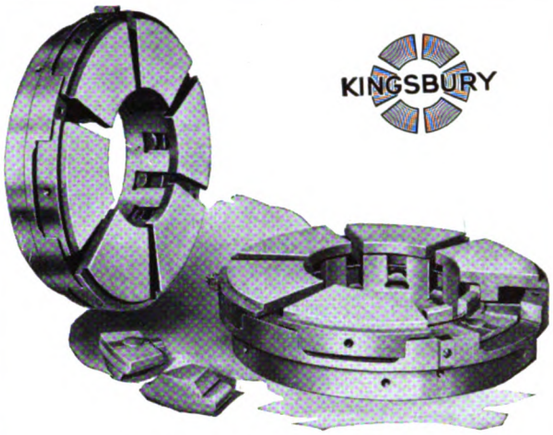

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*LIFE Magazine — Jan. 5, 1948

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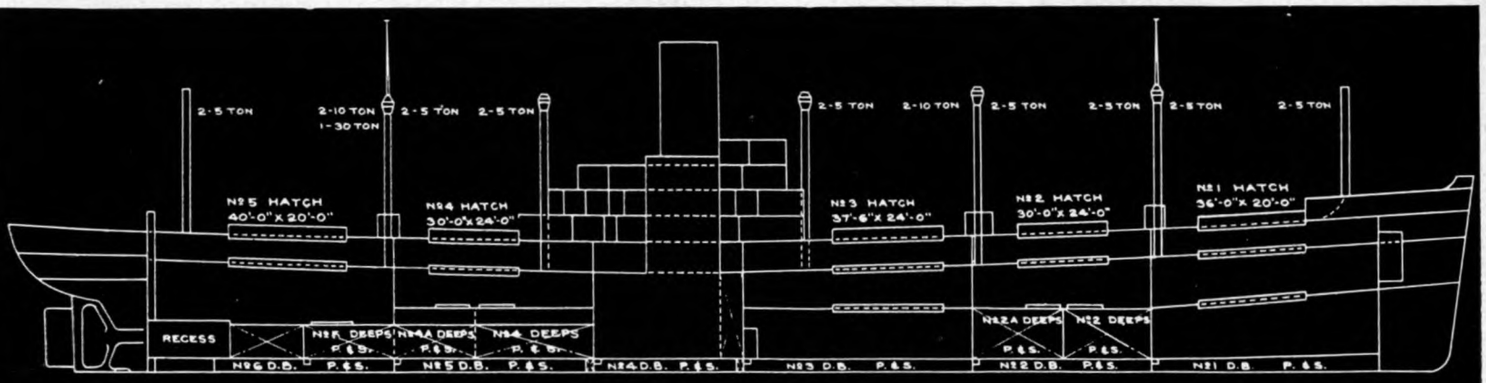

C-3 TYPE VESSELS INGALLS SHIPBLDG. CORP. - MISS.

LENGTH O.A.	492'-0"	GROSS TONNAGE (APPROX.)	7940
LENGTH B.P.	465'-0"	NET TONNAGE (APPROX.)	4700
BREADTH - MLD.	69'-6"	DEADWEIGHT TONNAGE (TOTAL)	12109
BREADTH - EXTREME		DISPLACEMENT TONNAGE @ 28'-6 7/8"	17600
DEPTH TO SHELTER DECK	42'-6"	DISPLACEMENT TONNAGE @ 10'-3 1/2"	5491
DEPTH TO SECOND DECK	33'-6"		
DRAFT - LOADED	28'-6 7/8"	PASSENGERS	6 ROOMS OF 2 - TOTAL 12
DRAFT - LIGHT	10'-3 1/2"	MAXIMUM TRIAL SPEED	16 1/2 Knots

CARGO CAPACITIES

HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	49680	38540
1	LOWER TWEEN DECK	50020	42880
1	UPPER TWEEN DECK	29190	25890
2	№2 DEEP TANK PORT	15490	12800
2	№2 " " STBD.	15490	12480
2	№2A " " PORT	17360	15480
2	№2A " " STBD.	17360	15150
2	LOWER TWEEN DECK	60810	55230
2	UPPER TWEEN DECK	38480	35200
3	HOLD	89330	77370
3	LOWER TWEEN DECK	REFER	38040
3	UPPER TWEEN DECK	47700	44350
4	№4 DEEP TANK PORT	20090	17270
4	№4 " " STBD.	20160	17290
4	№4A " " PORT	12310	9510
4	№4A " " STBD.	11750	8920
4	LOWER TWEEN DECK	56690	50020
4	UPPER TWEEN DECK	40980	37000
5	№5 DEEP TANK PORT	5460	3930
5	№5 " " STBD.	4700	3160
5	LOWER TWEEN DECK	73990	62330
5	UPPER TWEEN DECK	37750	34890
	TOTALS	714790	657730

SHIP'S CARGO LOCKERS

HOLD	COMPARTMENT	CU. FT. PORT	CU. FT. STBD.
1	№1 U.T.D. FR. 13-22	2870	2890
2	№2 " " 67-71	1110	1130
3	№3 " " 94-102	3250	3310
4	№4 " " 122-131	3000	3060
5	№5 " " 173-178	3100	3110
	TOTALS	13330	13500

SHIP'S STORAGE SPACE

DECK	COMPARTMENT	CU. FT.	
2ND & 3RD	BOSN'S STORES	4300	
CABIN	BAGGAGE LOCKER	308	
"	LOCKER	308	
SHELTER	BAGGAGE ROOM	290	
"	PAINT LOCKER	1260	
"	DECK LOCKER	700	
FLAT	STORES	9200	
	TOTAL	16366	

SHIP'S REFRIGERATED STORES

	BOX	CU. FT.	
	VEGETABLES		
	DAIRY		
	FISH		
	THAWING		
	MEAT		
	TOTAL		

REFRIGERATED CARGO

BOX		CU. FT. BALE	
1	PORT FR. 71-91	11000	
2	STBD. " " - "	11000	
3	PORT " 93-102	2530	
4	STBD. " " - "	1950	
	HATCH	11560	
	TOTAL	38040	

FUEL CONSUMPTION @ LOADED DRAFT

SPEED	BBLS/24 HRS	RANGE DAYS	
18.0	428	44	MAX. SPEED
16.5	320	57	CRUISING "
10.0	135	140	
9.0	120	157	
8.0	105	180	
6.5	95	210	

FUEL CAPACITY 418900 GALS.
PORT CONSUMPTION IDLE 30 BBLS/DAY
PORT CONSUMPTION CARGO 45 " / "

TANK CAPACITIES 100% / 98%

FRAME	TANK	CAP. CU. FT.	BBLS. FUEL	TONS FUEL	TONS S.W.	TONS F.W.	TONS C.O.
	FORE PEAK	4252			121.5		
	№1 D.B. PORT	3034	540	81.4	86.7		
	№1 " STBD.	3034	540	81.4	86.7		
	№2 " PORT	4557	805	122.4	130.2		
	№2 " STBD.	5789	1030	155.4	165.4		
	№3 " PORT	8302	1478	222.8	237.2		
	№3 " STBD.	9320	1765	266.3	283.4		
	№4 " PORT	5280			151.0	146.7	
	№4 " STBD.	5521			157.6	153.3	
	№5 " PORT	5974	1063	160.4	170.7		
	№5 " STBD.	5761	1026	154.7	164.6		
	№6 " PORT	2058	366	55.2	58.8		
	№6 " STBD.	2058	366	55.2	58.8		
	AFTER PEAK	2807	500	75.2	80.2		80.2
	SETTLING PORT	2579	459	69.2			
	SETTLING STBD.	2579	459	69.2			
	FRESH WATER PORT	1245				34.6	
	FRESH WATER STBD.	1245				34.6	
	DISTILLED WATER	648				18.0	
	№2 DEEP PORT	15490			442.5		380.0
	№2 " STBD.	15490			442.5		380.0
	№2A " PORT	17360			496.0		424.8
	№2A " STBD.	17360			496.0		424.8
	№4 " PORT	20090			574.0		495.6
	№4 " STBD.	20160			576.0		497.3
	№4A " PORT	12310			351.7		303.4
	№4A " STBD.	11750			335.7		289.4
	№5 " PORT	5460			156.0		134.3
	№5 " STBD.	4700			134.3		115.6
	№5A " PORT.	2404	437	65.0	68.7		60.2
	№5A " STBD.	1809	342	48.8	51.7		47.2
	TOTALS		11176	1682.6		387.2	3632.8

484 Tons

MANNING AUTHORITY

DECK		ENGINE		STEWARD - PURSER	
MASTER	1	CHIEF ENGINEER	1	CHIEF STEWARD	1
CHIEF OFFICER	1	1ST ASST. ENG'R.	1	CHIEF COOK	1
		2ND ASST. ENG'R.	1	2ND COOK - BAKER	1
2ND OFFICER	1	3RD ASST. ENG'RS.	2	ASST. COOK	1
3RD OFFICERS	2	JR. ENGINEERS	3	PANTRY MESSMAN	1
CADETS	2	CADETS	2	SALOON MESSMEN	2
RADIO OPERATOR	1	REFER ENG'R.	1	P.O. MESSMAN	1
BOSN.	1	CHIEF ELECTRICIAN	1	CREW MESSMAN	1
MAINTENANCE	2	ASST. ELECTRICIAN	1	UTILITY MEN	2
CARPENTER	1	MAINTENANCE	1	TOTAL STEWARDS	11
A.B. SEAMEN	6	WATERTENDER-FIREMEN	3		
O. SEAMEN	3	OILERS	3	PURSER	1
TOTAL DECK	21	WIPERS	3		
		TOTAL ENG'RS.	23		
				TOTAL CREW 56	

GENERAL PARTICULARS

WINCHES
18 SINGLE GEARED ELECTRIC WINCHES 50 H.P. FOR 5 & 10 TON BOOMS
2 DOUBLE " " " " " " 30 " "

ENGINE
GEARED TURBINE 8500 N.H.P. @ 85 R.P.M. MAX. HORSEPOWER 9350

BOILERS
TWO MAIN BOILERS OF CROSS DRUM SECTIONAL HEADER STRAIGHT TUBE TYPE - INTERDECK SUPER HEATERS - SINGLE PASS - FUEL BUNKER "C"
450# W.P. 750° SUPER HEAT. 37500 lbs STEAM PER HOUR

PROPELLER
SOLID TYPE BRONZE 4 BLADE 21'-8" DIA. X 21.67' PITCH

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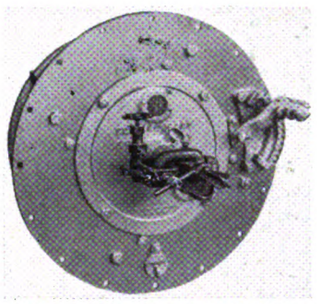


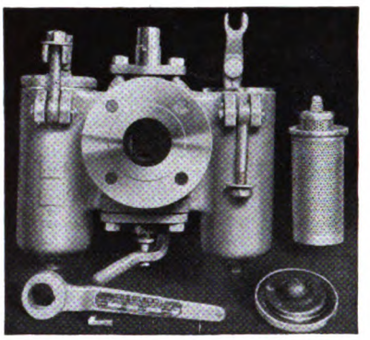
TYPE "T C" OIL BURNER

A new, modern design air register and pressure atomizing oil burner for marine boilers.

AIR REGISTER: "Aerodynamic" form of new cantilever type air vanes (air door) improves efficiency. Ball and roller operating mechanism shielded to keep clean. Rugged, cannot be fouled, and yet operable with a "feather-touch".

OIL ATOMIZER: Single piece tips. Renewable seats in atomizer head and socket. Automatic, spring operated, socket air check.

These Coen Burner sets as installed on the "Liberty" type boiler of Z2-EC2-S-C5 Aircraft Transport Vessels have proven most efficient, durable and practical. Write for general Burner Bulletin 48.



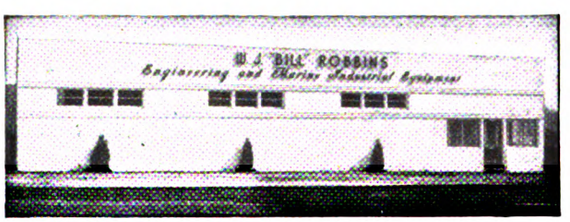
COEN DUPLEX STRAINERS

Coen Duplex Strainers of inverted plug design have been a "standard" for fuel oil pump suction and discharge and many other services for thirty years. All Liberty and C-4 Fuel Oil Strainers were Coen. Thousands of others furnished during the War and since for various classes of service.

Just developed is the new all steel fabricated **Coen Safety Strainer** for high pressure, hot fuel oil service or other application where the safety feature is desirable. Well out of service **cannot** be put into service until cover is in place and pressure tight.

COEN MULTIFILM OIL HEATER

The Coen Multifilm Oil Heater for both Fuel and Lubricating Oil is a small size, light weight, high capacity oil heater. All steel construction standard for 300 psi working pressure; higher upon order. Nearly 1000 now in satisfactory service in marine and industrial power plants, hundreds having been installed during the War on various types of vessels including C-4 Troop Transports and "Baby Flat Tops." Write for Bulletin 27-A.



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Combustion Equipment For Liberty and Victory Vessels

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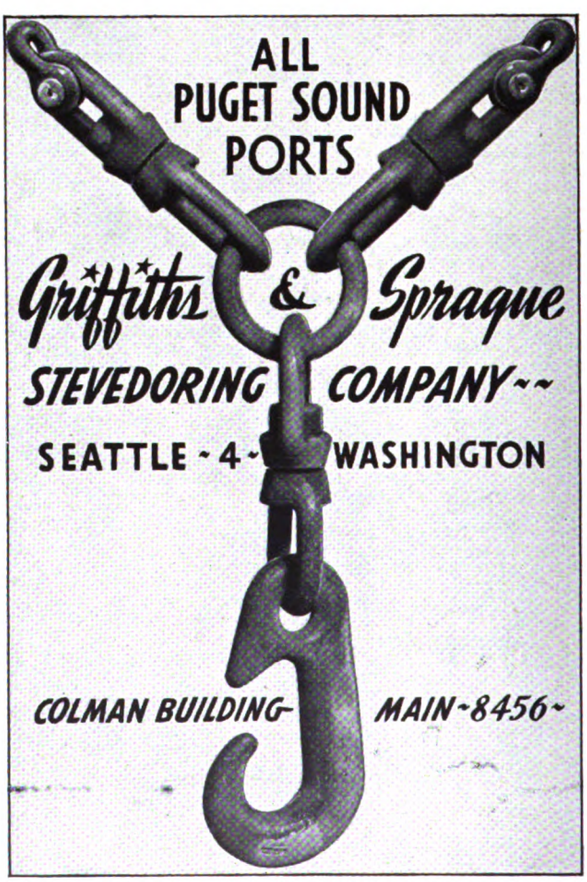

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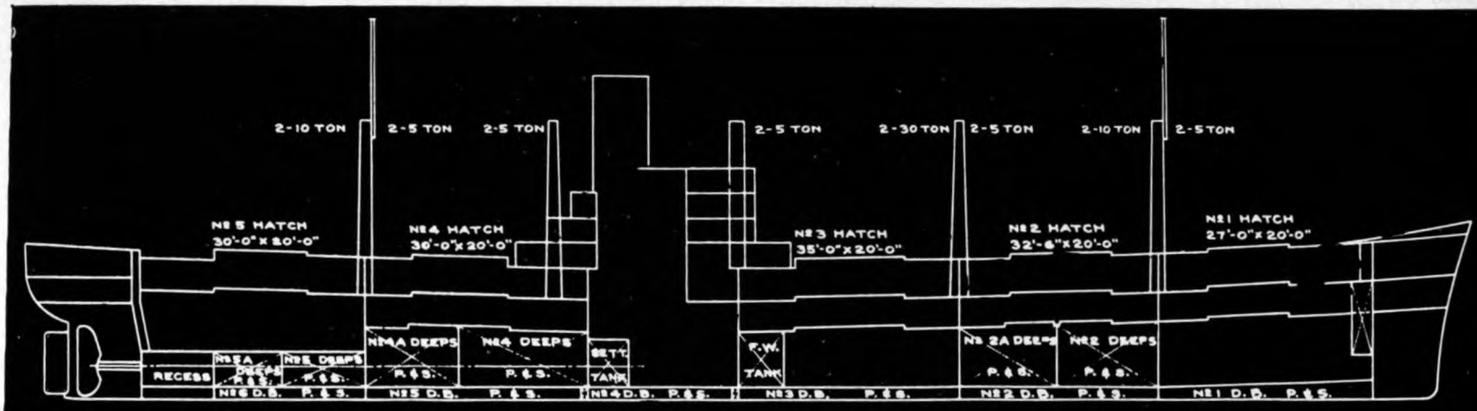

C2-S-B1 TYPE VESSELS MOORE DRY DOCK CO. - CALIF.

LENGTH O.A.	459'-8⅛" 459'-2½"	GROSS TONNAGE (APPROX.)	6220
LENGTH B.P.	435'-0"	NET TONNAGE (APPROX.)	3530
BREADTH - MLD.	63'-0"	DEADWEIGHT TONNAGE (TOTAL)	8540
BREADTH - EXTREME		DISPLACEMENT TONNAGE @ 25'-9"	13860
DEPTH TO MAIN DECK - MLD.	40'-0"	DISPLACEMENT TONNAGE @ 10'-11"	5320
DRAFT - LOADED	25'-9"		
DRAFT - LIGHT	10'-11"	PASSENGERS	
		MAXIMUM TRIAL SPEED	15½ Knots

CARGO CAPACITIES

HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	43762	37870
1	LOWER TWEEN DECK	22672	19756
1	UPPER TWEEN DECK	25548	23270
2	Nº2 DEEP TANK PORT	17020	14815
2	Nº2 " " STBD.	17812	14694
2	Nº2A " " PORT	17024	13443
2	Nº2A " " STBD.	16555	13367
2	LOWER TWEEN DECK	37808	32388
2	UPPER TWEEN DECK	37476	34752
3	HOLD	68034	39120
3	LOWER TWEEN DECK	43406	39290
3	UPPER TWEEN DECK	42708	61084
4	Nº4 DEEP TANK PORT	19013	16576
4	Nº4 " " STBD.	18613	16044
4	Nº4A " " PORT	13579	11500
4	Nº4A " " STBD.	13201	10965
4	LOWER TWEEN DECK	42174	36968
4	UPPER TWEEN DECK	42394	39740
5	LOWER TWEEN DECK	48080	41746
5	UPPER TWEEN DECK	31346	29000
	TOTALS	618585	546188

SHIP'S STORAGE SPACE

DECK	COMPARTMENT	CU. FT.
SECOND	PAINT ROOM	360
"	LAMP ROOM	441
"	CARPENTER SHOP	817
"	DECK LOCKER	254
"	DRY STORES	1904
"	RESISTOR HOUSE	280
"	C.O.2 STOWAGE	1587
"	PAINT LOCKER	360
"	AMM. MAG. AFT	2460
"	AMM. MAG. FOR'D.	3663
"	BOSN'S STORES	4856
THIRD	BOSN'S STORES	1920
	STORES FLAT AFT	6805
	TOTAL	25707

SHIP'S REFRIGERATED STORES

BOX	CU. FT.
VEGETABLES	1000
DAIRY	43
FISH	32
THAWING	340
MEAT	886
	2501

FUEL CONSUMPTION @ LOADED DRAFT

SPEED	BBLS/24 HRS	RANGE DAYS	
17	280	41	MAX. SPEED
15.5	240	47	CRUISING "
10			
9			
8			
6.5			

PORT CONSUMPTION IDLE 20 BBLS/DAY
PORT CONSUMPTION CARGO 35 " / "

TANK CAPACITIES 100%

FRAME	TANK	CAP. CU. FT.	BBLS. FUEL	TONS FUEL	TONS S.W.	TONS F.W.	
	FORE PEAK	3156			90.1		
	Nº 1 D.B. PORT	3333	593	90.0	95.2		
	Nº 1 D.B. STBD.	3333	593	90.0	95.2		
	Nº 2 D.B. PORT	5766	1027	155.7	164.7		
	Nº 2 D.B. STBD.	5766	1027	155.7	164.7		
	Nº 3 D.B. PORT	7506	1337	202.7	214.4		
	Nº 3 D.B. STBD.	7456	1328	200.9	213.0		
	Nº 4 D.B. PORT	3918			111.9	108.8	
	Nº 4 D.B. STBD.	3918			111.9	108.8	
	Nº 5 D.B. PORT	5420	965	146.3	154.8		
	Nº 5 D.B. STBD.	5420	965	146.3	154.8		
	Nº 6 D.B. PORT	1648	293	44.5	47.0		
	Nº 6 D.B. STBD.	1648	293	44.5	47.0		
	AFTER PEAK	2626			75.8		
	Nº 2 DEEP PORT	17015			509.0		
	Nº 2 " STBD.	17312			494.6		
	Nº 2A " PORT	17024			486.4		
	Nº 2A " STBD.	16555			473.0		
	Nº 4 " PORT	18613			531.8		
	Nº 4 " STBD.	19013			543.2		
	Nº 4A " PORT	13201			377.1		
	Nº 4A " STBD.	13579			387.7		
	Nº 5 " PORT	4171	749	112.6	119.2		
	Nº 5 " STBD.	3829	682	103.4	109.4		
	Nº 5A " PORT	2110	375	56.9	60.3		
	Nº 5A " STBD.	1803	318	48.7	51.5		
	SETTLING PORT	2697	480	72.8			
	SETTLING STBD.	2697	480	72.8			
	DISTILLED WATER	976			27.8	27.1	
	FRESH WATER	6185			176.1	171.8	
	TOTALS		11499	1743.8		416.5	
	TOTAL LESS DEEPS		9381				

MANNING AUTHORITY

DECK		ENGINE		STEWARD - PURSER	
MASTER	1	CHIEF ENGINEER	1	CHIEF STEWARD	1
CHIEF OFFICER	1	1ST ASST. ENG'R.	1	CHIEF COOK	1
2ND OFFICER	1	2ND ASST. ENG'R.	1	2ND COOK	1
3RD OFFICER	1	SR. 3RD ASST. ENG'R.	1	ASST. COOK	1
JR. 3RD OFFICER	1	JR. 3RD ASST. ENG'R.	1	PANTRY MESSMAN	1
CADETS	2	CADETS	2	SALOON MESSMEN	2
RADIO OPERATOR	1	CHIEF ELECTRICIAN	1	P.O. MESSMAN	1
BOSN.	1	ASST. ELECTRICIAN	1	CREW MESSMAN	1
MAINTENANCE	1	OILERS	3	UTILITY MEN	2
A. B. SEAMEN	6	FIREMEN - WATERTENDERS	3	TOTAL	11
ORD. SEAMEN	3	WIPERS	3	PURSER	1
TOTAL	19	TOTAL	18		
		TOTAL CREW	49		

GENERAL PARTICULARS

WINCHES
14 SINGLE GEARED ELECTRIC WINCHES FOR 5 AND 10 TON BOOMS
2 DOUBLE " " " " " " 30 " "

ENGINE
GEARED TURBINE 6000 N.H.P. @ 92 R.P.M. MAXIMUM HORSE POWER 6600

PROPELLER
SOLID TYPE BRONZE 4 BLADE 19'-0" DIA. 19.105' PITCH

NOTE:
THIS TYPE VESSEL HAS BEEN BUILT WITH 8500 N.H.P. OR C-3 TYPE POWER.
WITH THIS POWER THE CRUISING SPEED IS APPROX. 18.5 KNOTS WITH MAX. SPEED IN EXCESS OF 20 KNOTS.
THE FUEL CONSUMPTION IS SLIGHTLY LESS THAN THE C-3 TYPE.

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PUMP PACKING SETS for T2-SE-A1 TANKERS!

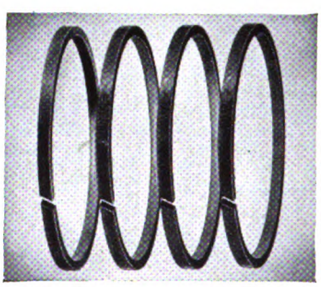
Installed as original equipment on a large number of T2-SE-A1 tankers, Sea-Ro packing and rings have given years of outstanding service. Sea-Ro has simplified re-ordering for tanker operators by packaging complete sets of pump packing and rings. All you do is order by number. Installation time is saved because packing is ready-to-use *without cutting or trimming*. SEND FOR ORDER CHART specifying sets for different pump manufacturers.

#505 NEK-SEAL RINGS

Originally developed under Sea-Ro exclusive patents. Once installed it forms a fine bearing surface, gives steady, reliable trouble-free service.

#525 SPRING RINGS

Expansion ring "floating" type, especially adapted for large, heavy-duty pumps. Long wearing with minimum friction.



#528 "GRAPHITIZED" RINGS

Smooth working, full floating type, reduces wear on cylinder liner. Unusual resistance to abrasion and strain.

Rings and packing, precision made to specification for pumps on
ALL TYPES OF VESSELS

SEA-RO NEK-SEAL PACKING PUMP PLUNGER RINGS

SEA-RO PACKING CO., INC. • WOOD-RIDGE, N. J.

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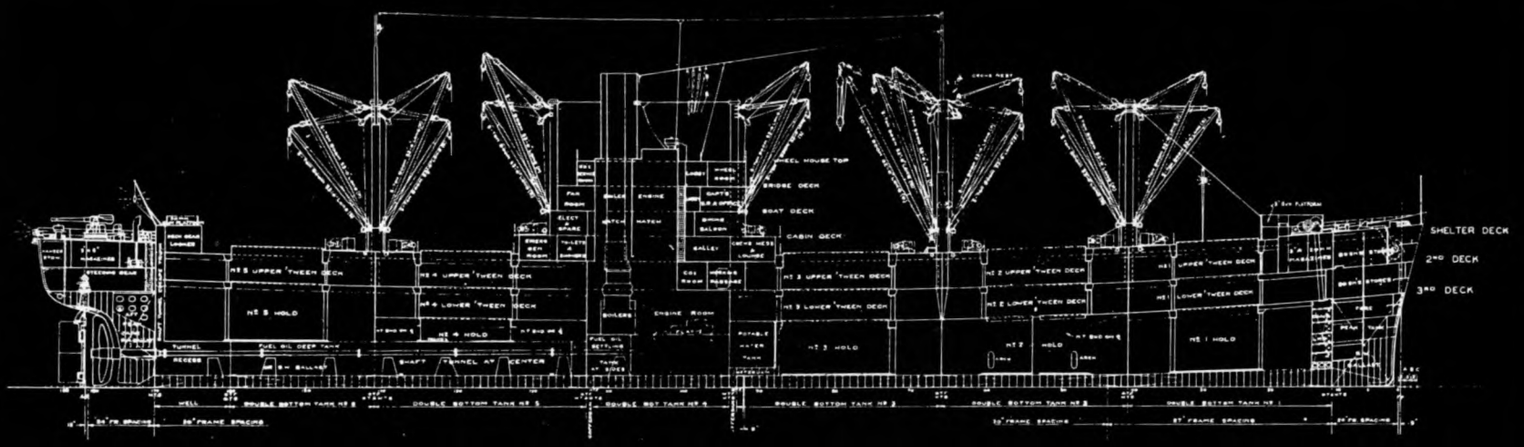

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SUMMARY OF CARGO CAPACITIES

BETWEEN FRAMES	SPACE	BALE NET CU FT	GRAIN NET CU FT	LONG'L C.G. AFT F.P. (BALE)	VERT. C.G. ABV. B.L. (BALE)
11-41	Nº 1 UPPER 'TWEEN DECK	24094	25678	61·05'	40·77'
41-66	Nº 2 " " "	32178	33785	121·45'	37·71'
66-94	Nº 3 " " "	36331	37968	185·52'	36·34'
113-141	Nº 4 " " "	36094	37789	304·71'	36·73'
141-170	Nº 5 " " "	28897	30621	372·02'	38·24'
	TOTAL UPPER 'TWEEN DECKS	157594	165841		
11-41	Nº 1 LOWER 'TWEEN DECK	20767	22491	62·74'	30·21'
41-66	Nº 2 " " "	32203	34396	121·51'	27·56'
66-94	Nº 3 " " "	38727	40553	186·79'	26·30'
113-141	Nº 4 " " "	37290	39409	303·90'	26·82'
	TOTAL LOWER 'TWEEN DECKS	128987	136849		
14-41	Nº 1 HOLD	37854	41013	65·42'	15·17'
41-54	Nº 2 " PORT	14039	16406	106·30'	13·54'
41-54	Nº 2 " STBD	13372	16399	106·32'	13·55'
54-66	Nº 2 " PORT	14705	16166	136·32'	12·88'
54-66	Nº 2 " STBD	14091	16178	136·29'	12·88'
66-94	Nº 3 "	60591	63975	182·20'	12·59'
113-141	Nº 4 "	59334	63152	303·50'	13·39'
141-170	Nº 5 "	42257	46866	369·46'	24·89'
	TOTAL HOLDS	256243	280155		
	TOTAL, ALL CARGO SPACES	542824	582845		

PRINCIPAL PARTICULARS

LENGTH, OVERALL			459'-1"
LENGTH, B.P. ON 25'-9" D.W.L.			435'-0"
BEAM, MOLDED			63'-0"
DEPTH, MOLDED TO SHELTER DECK AT SIDE			40'-0"
DEPTH, MOLDED TO 2ND DECK AT SIDE			31'-6"
ENGINE - GEARED TURBINES S.H.P. NORMAL			6000
BOILERS - 2			450# PRESS
PROPELLER	19'-0" DIA.	19'-10½" PITCH	
GROSS TONNAGE	U.S.		8258.27
NET TONNAGE	U.S.		4832.33
GROSS TONNAGE	PANAMA		8373.03
NET TONNAGE	PANAMA		5647.94
GROSS TONNAGE	SUEZ		8376.74
NET TONNAGE	SUEZ		6141.06

MISCL. SHIPS STORE SPACES

BETWEEN FRAMES	SPACE	NET CU FT.
STEM - 11	BOSN'S STORES 2ND DK	2900
" - 11	BOSN'S STORES 3RD DK	1529
99-106½	DRY STORES	1432
184½-STERN	HAWSER STOWAGE	877
	TOTAL	6738

SHIPS REFRIGERATED STORES

SPACE	NET CU FT.
MEAT ROOM	670.
VEGETABLE ROOM	898.
DAIRY PRODUCTS	117.
FISH	76.
THAWING ROOM	337.
TOTAL	2098.

SUMMARY OF TANK CAPACITIES
FUEL OIL & SALT WATER BALLAST

BETWEEN FRAMES	TANK	GALLONS 100% FULL	BBLS. F.O. 98% FULL	TONS F.O. 98% FULL	TONS S.W. 100% FULL	LONG'L C.G. AFT F.P. 100% FULL	VERT C.G. ABV. B.L. 100% FULL
STEM-11	FORE PEAK	25777			98·46	13·69'	16·06'
11-41	Nº 1 DBL. BOTT (P)	25527	595·62	89·83	97·50	62·79'	2·66'
11-41	Nº 1 " " (S)	24890	580·76	87·59	95·07	63·23'	2·67'
41-66	Nº 2 " " INBD (P)	25991	606·45	91·46	99·28	121·41'	2·00'
41-66	Nº 2 " " INBD (S)	25991	606·45	91·46	99·28	121·41'	2·00'
41-66	Nº 2 " " OUTBD (P)	17508	408·52	61·61	66·87	124·82'	2·22'
41-66	Nº 2 " " OUTBD (S)	17508	408·52	61·61	66·87	124·82'	2·22'
66-93	Nº 3 " " INBD (P)	29840	696·26	105·01	113·97	185·75'	2·00'
66-93	Nº 3 " " INBD (S)	29840	696·26	105·01	113·97	185·75'	2·00'
66-93	Nº 3 " " OUTBD (P)	25377	592·12	89·30	96·93	185·90'	2·14'
66-93	Nº 3 " " OUTBD (S)	25377	592·12	89·30	96·93	185·90'	2·14'
113-141	Nº 5 " " INBD (P)	25596	597·24	90·07	97·78	301·82'	1·99'
113-141	Nº 5 " " INBD (S)	25596	597·24	90·07	97·78	301·82'	1·99'
113-141	Nº 5 " " OUTBD (P)	17702	413·05	62·29	67·62	300·18'	2·31'
113-141	Nº 5 " " OUTBD (S)	17702	413·05	62·29	67·62	300·18'	2·31'
141-160	Nº 6 " " (P)	12384	288·95	43·58	47·30	358·62'	2·25'
141-160	Nº 6 " " (S)	12384	288·95	43·58	47·30	358·62'	2·25'
107-113	FUEL OIL SETTLING (P)	23064	538·17	81·17		261·95'	9·44'
107-113	FUEL OIL SETTLING (S)	23064	538·17	81·17		261·95'	9·44'
141-160	FUEL OIL DEEP (P)	49936	1165·17	175·73	190·74	359·21'	9·90'
141-160	FUEL OIL DEEP (S)	40327	940·95	141·91	154·04	358·22'	10·04'
170-STERN	AFT PEAK	24117			92·12	421·45'	25·46'
	TOTAL		11564·02	1744·04	1907·43		

FRESH WATER

BETWEEN FRAMES	TANK		GALLONS 100% FULL	TONS F.W. 100% FULL	LONG'L C.G. AFT F.P.	VERT. C.G. ABV. B.L.
88-94	POTABLE WATER		46841	173·95	214·50'	14·03'
88-94	DISTILLED WATER		7246	26·91	214·50'	13·03'
94-112	Nº 4 DBL. BOTT. INBD (P)	RES. BOILER FEED WATER	15893	73·87	244·50'	2·03'
94-112	Nº 4 " " INBD (S)	" "	19027	70·66	244·20'	1·97'
94-106	Nº 4 " " OUTBD (P)	" "	10668	39·62	237·16'	2·18'
94-106	Nº 4 " " OUTBD (S)	" "	11098	41·21	236·82'	2·16'
	TOTAL		114773	426·22		

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35% LESS WEIGHT AND SAFER, TOO.

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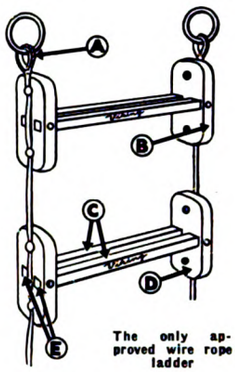

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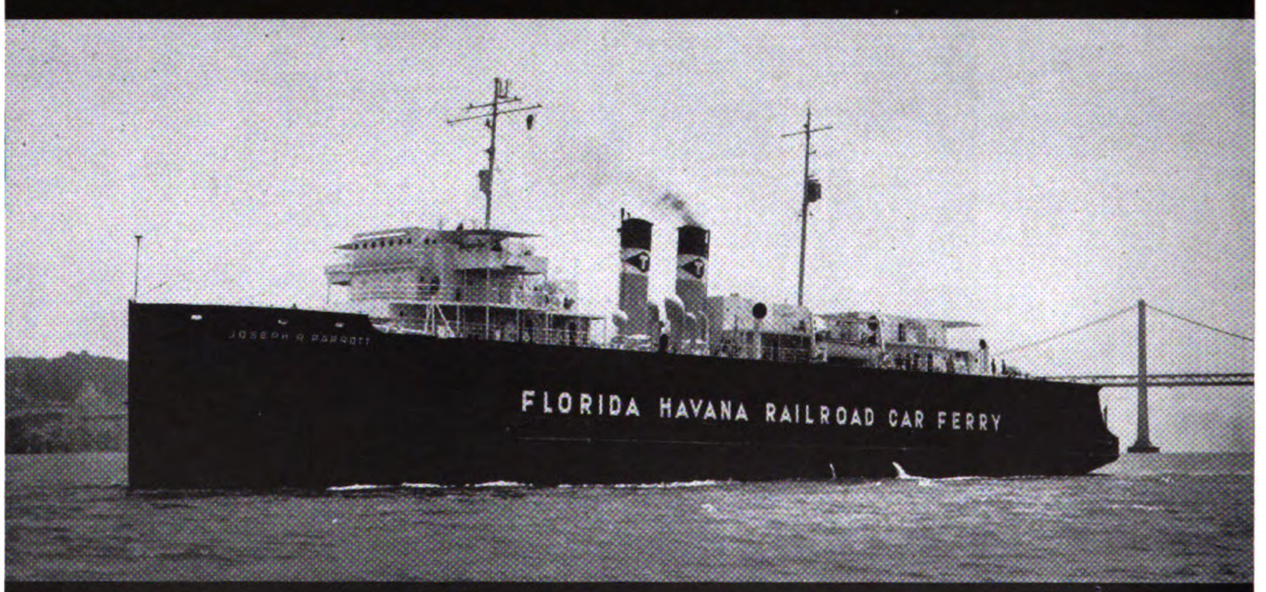

JOSEPH R. PARROTT, Railroad Car Ferry (sailed as USS SHAWMUT under U. S. Navy during World War II) operated by the West India Fruit & Steamship Co., on trial run in San Francisco Bay, after conversion by the Moore Dry Dock Company.

MOORE DRY DOCK COMPANY

SAN FRANCISCO OAKLAND CALIFORNIA

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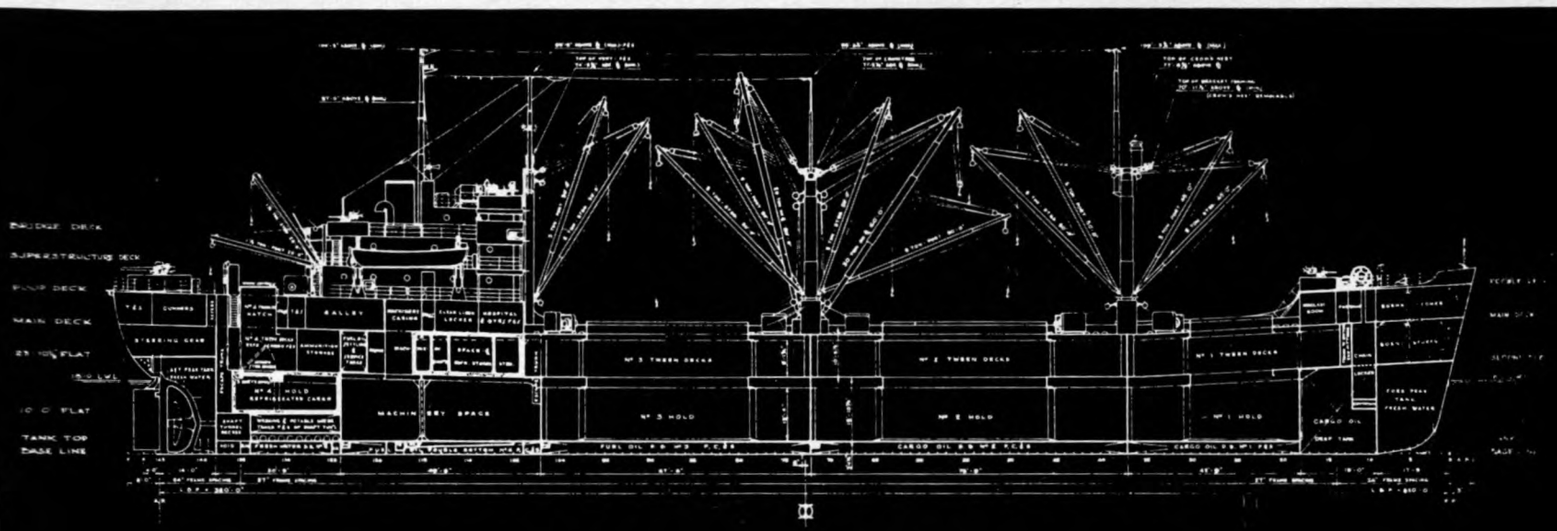

CI-M-AVI CARGO SHIP

DRY CARGO

SPACE	FRAMES	CENTER OF GRAVITY FROM ⊠	CENTER OF GRAVITY FROM ℄	CAPACITY - CUBIC FEET GRAIN	CAPACITY - CUBIC FEET BALE
Nº 1 TWEEN DECKS	8-37	+107.28	25.70	26740	24050
Nº 1 HOLD	18-37	+101.00	11.70	28025	24620
TOTAL - HOLD Nº 1				54765	48670
Nº 2 TWEEN DECKS	37-72	+ 41.12	24.35	42290	39295
Nº 2 HOLD	37-72	+ 41.20	10.82	60545	55125
TOTAL - HOLD Nº 2				102835	94420
Nº 3 TWEEN DECKS	72-104	- 34.20	24.38	38680	36045
Nº 3 HOLD	72-102	- 31.75	10.81	52095	47140
TOTAL - HOLD Nº 3				90775	83185
Nº 4 TRUNKED HATCH	131-135	-135.50	31.05	1460	1455
GRAND TOTAL - DRY CARGO				249835	227730

FUEL OIL & WATER BALLAST

TANK	FRAMES	CENTER OF GRAVITY FROM ⊠	CENTER OF GRAVITY FROM ℄	DIESEL OIL 96% FULL GALLONS	DIESEL OIL 96% FULL BARRELS	DIESEL OIL 96% FULL TONS	S.W. BALLAST 100% FULL TONS
FUEL OIL							
DOUBLE BOTTOM Nº 3 P	72-102	-31.48	1.61	20765	494.5	65.4	80.9
" " Nº 3 S	72-102	-31.48	1.61	20765	494.5	65.4	80.9
" " Nº 3 C	72-102	-32.00	1.56	30215	719.5	95.2	117.8
" " Nº 4 P	102-124	-85.42	1.70	10110	240.5	31.8	39.4
" " Nº 4 S	102-124	-86.42	1.69	9990	238.0	31.5	38.9
" " Nº 4 C	102-124	-92.89	1.54	14530	346.0	45.8	56.6
DAILY SERVICE TANK P	121-124	-111.86	25.21	2300	55.0	7.2	—
" " " S	121-124	-111.86	25.21	2300	55.0	7.2	—
SETTLING TANK P	121-124	-111.86	25.28	2340	55.5	7.4	—
" " S	121-124	-111.86	25.28	2340	55.5	7.4	—
TOTAL FUEL OIL				115655	2754.0	364.3	—
RESERVE FUEL OIL OR CARGO OIL							
DOUBLE BOTTOM Nº 1 P	18-37	+ 98.59	1.70	12265	292.0	38.6	47.8
" " Nº 1 S	18-37	+ 98.12	1.69	12660	301.5	39.9	49.3
" " Nº 2 P	37-72	+ 40.24	1.62	23415	557.5	73.8	91.3
" " Nº 2 S	37-72	+ 40.24	1.62	23418	557.5	73.8	91.3
" " Nº 2 C	37-72	+ 41.13	1.56	33400	843.0	111.3	138.0
DEEP TANK	9-18	+131.02	12.42	50845	1210.5	160.2	198.2
TOTAL RESERVE FUEL OIL OR CARGO OIL				158000	3762.0	497.8	—
GRAND TOTAL - DIESEL OIL AND WATER BALLAST				273655	6516.0	862.1	1030.4

FRESH WATER

TANK	FRAMES	CENTER OF GRAVITY FROM ⊠	CENTER OF GRAVITY FROM ℄	100% FULL GALLONS	100% FULL TONS
WASHING & POTABLE WATER - PORT	124-134	-124.18	7.60	6870	25.5
" " " - STBD.	124-132	-122.69	7.65	4515	16.8
TOTAL WASHING & POTABLE WATER				11385	42.3
ENGINE CIRCULATING WATER - D. B. Nº 5	125-134	-126.11	1.71	7560	28.1
FOREPEAK	STEM-9	+148.00	14.31	15340	57.7
AFTERPEAK	138-STERN	-151.07	10.64	12160	45.1
GRAND TOTAL - FRESH WATER				46645	173.2

DIMENSIONS & DATA

LENGTH OVER ALL	338'-8⅜"
LENGTH ON DESIGNED LOAD WATERLINE	320'-0"
LENGTH BETWEEN PERPENDICULARS	320'-0"
BREADTH, MOLDED	50'-0"
BREADTH, EXTREME	50'-3⅜"
DEPTH, MOLDED, TO TOP OF MAIN DECK PLATING AT SIDE	29'-0¾"
DRAFT, MOLDED, TO DESIGNED LOAD WATERLINE	18'-0"
DRAFT TO BOTTOM OF KEEL AT DESIGNED LOAD WATERLINE	18'-0 3/32"
DRAFT TO SUBDIVISION LOAD LINE, MOLDED	21'-0"
DRAFT TO BOTTOM OF KEEL AT SUMMER L. L. (A.B.S.)	
CAMBER FLAT ℄ LEVEL TO 9'-6" OFF ℄, 7¾" DROP IN 15'-6" OF OUTER DECK.	
SHEER FORWARD - DECKS RISE 4'-0" IN STRAIGHT LINE AT ℄ FROM FR. 35½ TO F.P.	
SHEER AFT - DECKS RISE 2'-0" IN STRAIGHT LINE AT ℄ FROM FR. 104 TO A.P.	
GROSS TONNAGE	
NET TONNAGE	

MAIN ENGINE: SINGLE ACTING SOLID INJECTION DIESEL WITH NORMAL RATED SHAFT HORSEPOWER OF 1700 AT 180 R.P.M.

DECK MACHINERY:
10 SINGLE SPEED 50 H.P. UNIT WINCHES ON MAIN DECK AT 5 TON BOOMS.
4 TWO SPEED 50 H.P. UNIT WINCHES ON MAIN DECK AT 20 AND 30 TON BOOMS.
2 TWO SPEED 50 H.P. UNIT WINCHES ON POOP DECK FOR REFRIGERATED CARGO HANDLING AND FOR WARPING.
ONE HORIZONTAL SHAFT 60 H.P. WINDLASS WITH 2 WARPING HEADS.

SHIP'S STORES

SPACE	LOCATION DECK	LOCATION FRAMES	LOCATION SIDE	BALE CUBIC FEET	
MEAT ROOM	SECOND	104-107	S	495	
FRUIT ℄ VEGETABLE ROOM	"	107-112	S	800	✦
DAIRY ROOM	"	112-114	S	275	
FISH ROOM	"	114-116	S	125	
HANDLING AREA	"	107-114	S	545	
TOTAL SHIP'S REFRIGERATED STORES				2240	
BOSN'S STORES	MAIN	A-9	℄	2240	1745*
CANVAS ℄ AWNING ROOM	"	9-12	P	690	
CARPENTER SHOP ℄ STORES	"	9-12	S	690	
PAINT & OIL ROOM	"	14-18	P	585	
LAMP ROOM	"	14-18	S	585	
BOSN'S STORES	SECOND	0-9	℄	1770	
ENGINEERS' STORES	"	122-124	P	435	
DRY STORES	"	116-124	P	1770	
ARMED GUARD GEAR LOCKER	MAIN	5-9	S		435*
TOTAL SHIP'S GENERAL STORES				8765	

REFRIGERATED CARGO

SPACE	FRAMES	CENTER OF GRAVITY FROM ⊠	CENTER OF GRAVITY FROM ℄	BALE CUBIC FEET
Nº 4 TWEEN DECKS - PORT	124-138	129.59	25.58	2700
Nº 4 TWEEN DECKS - STBD.	124-138	-129.13	25.56	2610
Nº 4 HOLD	124-138	-127.08	14.76	4520
TOTAL REFRIGERATED CARGO				9830

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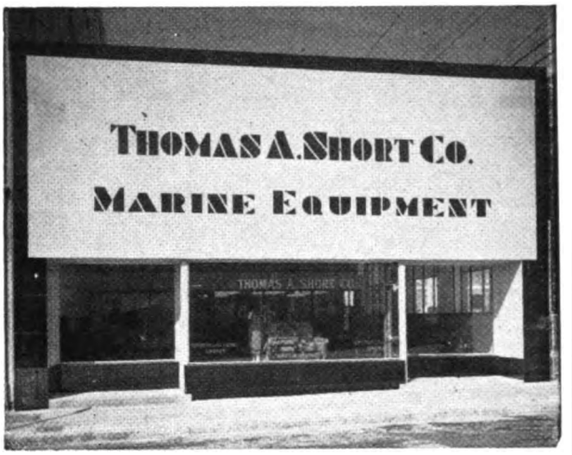

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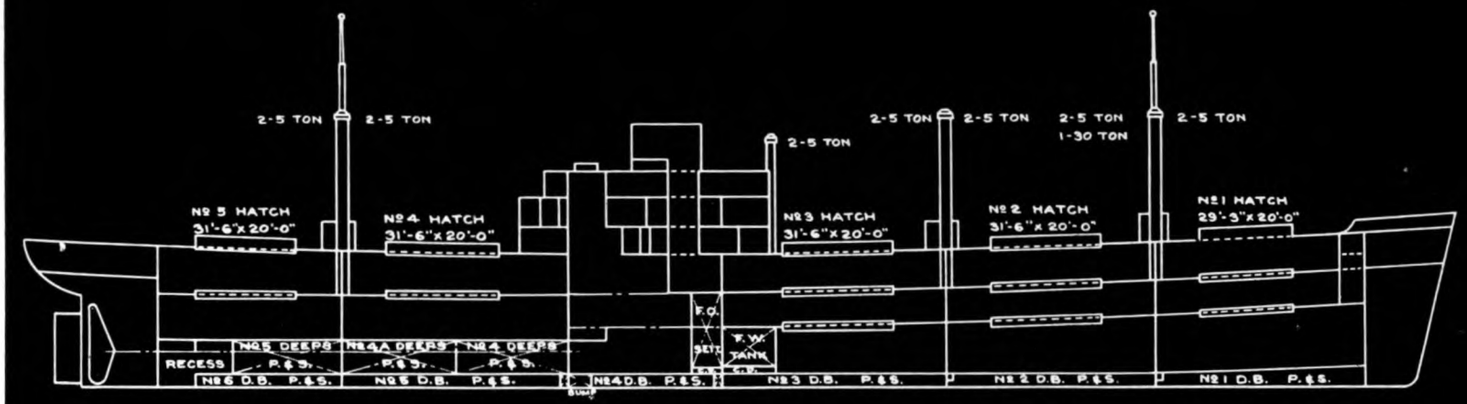

C1-B TYPE VESSELS

CONSOLIDATED STEEL CORP. - CALIF.

LENGTH O. A.	417'-9"	GROSS TONNAGE (APPROX.)	6710
LENGTH B. P.	395'-0"	NET TONNAGE (APPROX.)	3930
BREADTH - MLD.	60'-0"	DEADWEIGHT TONNAGE (TOTAL)	9047
BREADTH - EXTREME	60'-2⅜"	DISPLACEMENT TONNAGE @ 27'-7⅜"	12875
DEPTH TO MAIN DECK - MLD.	37'-6"	DISPLACEMENT TONNAGE @ 9'-6 3/16"	3828
DRAFT - LOADED	27'-7⅜"		
DRAFT - LIGHT	9'-6 3/16"	PASSENGERS	6 ROOMS OF 2 - TOTAL 12

CARGO CAPACITIES			
HOLD	COMPARTMENT	GRAIN	BALE
1	HOLD	39673	34492
1	LOWER TWEEN DK.	19124	15922
1	UPPER TWEEN DK.	21501	19245
2	HOLD	64398	57504
2	LOWER TWEEN DK.	32486	29669
2	UPPER TWEEN DK.	32556	30002
3	HOLD	59314	53002
3	LOWER TWEEN DK.	35886	31116
3	UPPER TWEEN DK.	37150	33805
4	HOLD	55003	49167
4	TWEEN DK.	33919	31183
5	HOLD	29595	24315
5	TWEEN DK.	25154	22952
	TOTALS	485761	436533

SHIP'S STORAGE SPACE			
DECK	COMPARTMENT	CU. FT.	
SECOND	BOS'N'S. STORES	3167	
THIRD	BOS'N'S. STORES	1687	
MAIN	DRY STORES	2069	
SECOND	CARPENTER SHOP	589	
SECOND	PAINT ROOM	848	
MAIN	SLOP CHEST	316	
	MISC. LOCKERS	694	
	TOTAL	9370	

SHIP'S REFRIGERATED STORES		
	BOX	CU. FT.
	TOTAL	3543

FUEL CONSUMPTION @ LOADED DRAFT			
SPEED	BBLS/24 HRS	RANGE DAYS	
16	180	70	MAX. SPEED
14.5	155	84	CRUISING "
10			
9			
8			
6.5			

PORT CONSUMPTION IDLE 12 BBLS/DAY
PORT CONSUMPTION CARGO 25 " "

TANK CAPACITIES 100%						
FRAME	TANK	CAP. CU. FT.	BBLS. FUEL	TONS FUEL	TONS S.W.	TONS F.W.
	FORE PEAK	2677			76.5	
	Nº 1 D.B. PORT	2895	515	77.7	82.7	
	Nº 1 D.B. STBD.	2895	515	77.7	82.7	
	Nº 2 D.B. PORT	5338	950	143.3	152.5	
	Nº 2 D.B. STBD.	5338	950	143.3	152.5	
	Nº 3 D.B. PORT	6437	1146	172.8	183.9	
	Nº 3 D.B. STBD.	6437	1146	172.8	183.9	
	Nº 4 D.B. PORT	3658			104.5	101.6
	Nº 4 D.B. STBD.	3749			107.1	104.1
	Nº 5 D.B. PORT	3655	651	98.1	104.4	
	Nº 5 D.B. STBD.	3594	640	96.5	102.7	
	Nº 6 D.B. PORT & STBD.	2122	378	56.9	60.6	
	AFTER PEAK	3664			104.7	
	SETTLING PORT	1457	259	39.1		
	SETTLING STBD.	1457	259	39.1		
	Nº 4 DEEP PORT	8012	1427	215.2	228.9	
	Nº 4 DEEP STBD.	6939	1235	186.3	198.2	
	Nº 4A DEEP PORT	5026	895	134.9	143.6	
	Nº 4A DEEP STBD.	4377	779	117.5	125.0	
	Nº 5 DEEP PORT	3139	559	84.3	89.7	
	Nº 5 DEEP STBD.	2390	425	64.1	68.3	
	DISTILLED WATER	535			15.3	14.8
	FRESH WATER	4401			125.8	122.3
	TOTALS		12729	1919.6		342.8
	TOTALS LESS DEEPS		7409			

MANNING AUTHORITY					
DECK		ENGINE		STEWARD-PURSER	
MASTER	1	CHIEF ENGINEER	1	CHIEF STEWARD	1
CHIEF OFFICER	1	1ST ASST. ENG'R.	1	CHIEF COOK	1
2ND OFFICER	1	2ND ASST. ENG'R.	1	2ND COOK	1
3RD OFFICER	1	SR. 3RD ASST. ENG'R.	1	ASST. COOK	1
JR. 3RD OFFICER	1	JR. 3RD ASST. ENG'R.	1	PANTRY MESSMAN	1
RADIO OPERATOR	1	CADETS	2	SALOON MESSMAN	1
BOS'N.	1	CHIEF ELECTRICIAN	1	P.O. MESSMAN	1
MAINTENANCE	1	ASST. ELECTRICIAN	1	CREW MESSMAN	1
A.B. SEAMEN	6	OILERS	3	UTILITY MEN	2
O. SEAMEN	3	FIREMEN-WATERTENDERS	3	TOTAL	10
CADETS	2	WIPERS	3	PURSER	1
TOTAL DECK	19	TOTAL ENG.	18		
				TOTAL CREW	48

GENERAL PARTICULARS

WINCHES
12 SINGLE GEARED ELECTRIC WINCHES FOR 5 TON BOOMS
2 DOUBLE " " " " 30 " "

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GEARED TURBINE 4400 N.H.P. @ 90 SHAFT R.P.M.

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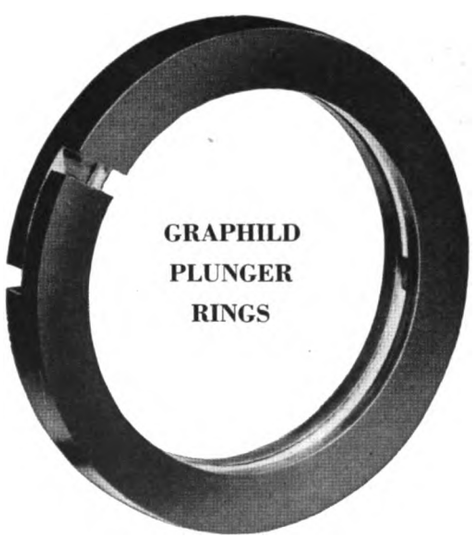

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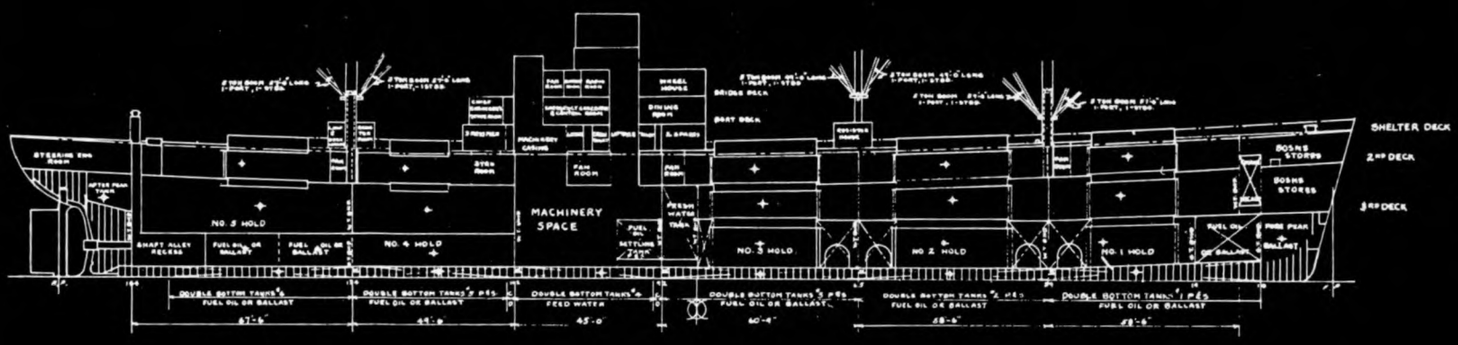

C1A CARGO VESSEL

SUMMARY OF CARGO CAPACITIES

BETWEEN FRAMES		BALE NET CU FT	GRAIN NET CU FT
13-39	No.1 UPPER TWEEN DECKS	24330	24990
39-65	No.2 " " "	31150	31404
65-92	No.3 " " "	32670	32988
118-134	No.4 " " "	19290	19618
134-164	No.5 " " "	27660	28495
	TOTAL UPPER TWEEN DECKS	135100	137495
13-39	No.1 LOWER TWEEN DECKS	30180	31653
39-65	No.2 " " "	38370	39375
65-92	No.3 " " "	32405	32985
112-134	No.4 " " "	40450	41389
134-164	No.5 " " "	37420	39861
	TOTAL LOWER TWEEN DECKS	178825	185263
19-39	No.1 HOLD	25450	26798
39-65	No.2 "	46170	47561
65-92	No.3 "	45530	46894
112-134	No.4 "	17920	19085
	TOTAL HOLDS	135070	140338
	TOTAL ALL CARGO SPACES	448995	463096

PRINCIPAL PARTICULARS

LENGTH OVERALL	412'-3"
LENGTH BETWEEN PERPENDICULARS	390'-0"
BREADTH MOLDED	60'-0"
DEPTH MOLDED TO SHELTER DECK AT SIDE	37'-6"
DEPTH MOLDED TO SECOND DECK AT SIDE	28'-3"
BOILERS 2-B&W	440# PRESSURE
PROPELLER 1	17'-0" DIA. 18'-4½ PITCH
PASSENGER	4
GROSS TONNAGE U.S.	5093.25
NET TONNAGE U.S.	2859
GROSS TONNAGE PANAMA	7120.73
NET TONNAGE PANAMA	4960.61
GROSS TONNAGE SUEZ	7124.07
NET TONNAGE SUEZ	5448.32

MISCL. SHIP'S STORES SPACES

BETWEEN FRAMES	SPACE	NET CU FT
STEM-13	3RD DECK BOSN'S STORES	3,850
STEM-13	2ND " BOSN'S STORES	5,140
95-101	2ND " DRY STORES	340
114-118	2ND " DRY STORES	718
102½-105	SHELTER DK. CREWS BAGGAGES	280
95-99	BOAT DK LINEN ROOM	380
134-137	SHELTER DK. DECK STORES	862
	TOTAL	11570

SUMMARY OF TANK CAPACITIES

FUEL OIL & SALT WATER BALLAST

BETWEEN FRAMES	TANK	GALLONS 100% FULL	BBLS. F.O. 97% FULL	TONS F.O. 97% FULL	TONS S.W. 100% FULL
STEM-10	FORE PEAK	13800			52.71
10-39	No1 DBL. BOTTOM (PORT)	24040	555.2	83.74	93.74
10-39	No1 " " (STBD)	24040	555.2	83.74	93.74
39-65	No2 " " (PORT)	37390	863.6	130.24	142.82
39-65	No2 " " (STBD)	37390	863.6	130.24	142.82
65-92	No3 " " (PORT)	42620	984.4	148.46	163.14
65-92	No3 " " (STBD)	42620	984.4	148.46	163.14
113-134	No5 " " (PORT)	22680	523.8	79.00	86.67
113-134	No5 " " (STBD)	21840	504.4	76.08	83.42
134-159	No6 " "	22300	515.1	77.68	85.66
159-STERN	AFT PEAK	33470			127.85
10-19	No1 DEEP TANK	42570	983.2	148.30	162.62
134-149	No2 " " (PORT)	26160	604.2	91.12	99.99
134-144	No3 " " (STBD)	22410	517.6	78.06	85.61
144-154	No4 " " (PORT)	16050	307.6	53.91	61.31
144-154	No5 " " (STBD)	12300	284.1	42.93	46.99
92-98	FUEL OIL SETTLING TANK P.&S.	16592	383.2	57.80	
	TOTAL	458272	9429.6	1430.76	1692.22

SHIP'S REFRIGERATOR STORES

SPACE	NET CU FT
VEGETABLES	633
DAIRY PRODUCTS	145
FISH	136
ICE ROOM	140
THAWING ROOM	438
MEAT	544
TOTAL	2036

FRESH WATER

BETWEEN FRAMES	TANK	GALLONS 100% FULL	TONS F.W. 100% FULL
87-92	POTABLE WATER AFT END No3 HOLD	36440	135.70
93-112	No4 DBL BOTTOM RES. BLR. FEED (PORT)	24840	92.50
93-112	No4 DBL BOTTOM RES. BLR. FEED (STBD)	25180	93.77
87-92	DISTILLED WATER AFT END No3 HOLD (PORT)	4205	15.66
	TOTAL	90665	337.63

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Every Day Reference Data

USEFUL STATISTICS ABOUT THE AMERICAN MERCHANT MARINE AND RELATED TRADE

WORLD MERCHANT FLEET

Page

Merchant Fleets of the World as of June 30, 1947....154
Merchant Fleets of the World as of June 30, 1947—
Number, Gross & Dwt. Tonnage of Seagoing Steam and Motor Merchant Vessels of 1,000 Gross Tons and Over....156
Merchant Tanker Fleet of the World—Prewar and Postwar....158
World Tank Ship Fleets as of October 1, 1947—
Actual Changes in Number, Gross and Dwt. Tonnage from March 1, 1947 and September 1, 1939....160
Changes in T2-SE-A1 Equivalents from March 1, 1947 and Sept. 1, 1939....160
Actual Number, Gross and Dwt. Tonnage and T2-SE-A1 Equivalent Tonnage....162
U. S. Postwar Merchant Fleet—
General Quality of Oceangoing Vessels....154
General Quality of Vessels Estimated as Required for Operation....154
Comparison Between World Postwar and Prewar—
Deadweight Tonnage by General Types of Vessels....154
Deadweight Tonnage by Principal Nat'l Merchant Fleets....164
Combination Vessel Dwt. Tonnage by Principal National Merchant Fleet....162
Tanker Dwt. Tonnage by Principal Nat'l Merchant Fleets....162
Freight Dwt. Tonnage by Principal Nat'l Merchant Fleets....164
Age of U. S. Vessels of 500 Gross Tons and Over:
By Major Services....158

WORLD SHIPBUILDING

Number and Gross Tonnage of Merchant Vessels of 100 Tons Gross and Upwards Launched in the Various Countries of the World During the Years 1915-1947....166
Steel Steamers and Motorships Under Construction in the World as of Dec. 31, 1947....168
Oil Tankers Under Construction in the World as of Dec. 31, 1947....168
U. S. Flag Merchant Tank Ships as of March 1, 1948 by Design & Ownership....168

MISCELLANEOUS

Commercial Traffic Through the Panama Canal—
Summary, Fiscal Years Ended June 30: 1935 to 1946....164
U. S. Oceanborne Foreign Traffic—Amount carried in Tankers and Percent of U.S. Flag Vessel Participation....164
Summary of Sales of USMC Vessels to Jan. 1, 1948—Not included under the terms of the Merchant Ship Sales Act of 1946, as amended....164

WORLD MERCHANT FLEET

Merchant Fleets of the World As Of June 30, 1947

The merchant fleets of the world as of June 30, 1947, according to the attached table, consisted in the aggregate of 12,370 vessels totaling 70.4 million gross and 98.7 million deadweight tons. This was a slight decrease compared with 12,445 vessels of 71.0 million gross and 99.2 million deadweight tons reported as of June 30, 1946.

Combination passenger and cargo type vessels, while well below the prewar level (about 45 percent) increased about seven percent during the past year. Although slight increases occurred in refrigerator vessels and bulk freight carriers in the past 12 months, tonnage remains below the prewar figure. Conversely, freighter and tanker tonnage while decreasing by about one percent since June 1946, is well above prewar tonnage.

Despite this decrease in the aggregate, several of the foreign maritime nations have made substantial gains in their fleets, during the past 12 months, until today a number of them are approaching, and in some instances, exceeding their prewar level. Factors contributing to this recovery have been expanding local construction and purchases from the United States.

While this increase has been taking place in foreign flag fleets the United States fleet on the other hand was decreased by approximately 20 percent during the same period, due principally to sales abroad and the scrapping of obsolete or war damaged vessels. Nevertheless, the fleet, which includes about 18 million deadweight tons of "Liberty" type freighters remains considerably above the prewar level.

Changes which have occurred in the total pre and postwar fleet of a number of selected countries are shown in the following comparison of deadweight tonnage.

	As of June 30, 1947	As of June 30, 1946	As of September 1, 1939
	(Deadweight in Millions)		
Total	98.7	99.2	80.6
United States	[1]44.2	[1]55.1	11.7
British Empire	23.2	21.2	24.1
United Kingdom	20.1	18.4	21.9
Others	3.1	2.8	2.2
France	2.5	1.5	3.0
Greece	1.9	.9	2.8
Italy	1.9	.7	3.9
Netherlands	2.9	2.0	3.4
Norway	5.2	4.2	6.9
Panama	2.9	1.3	1.1
Spain	1.3	1.3	1.1
Sweden	2.4	2.2	2.0
U.S.S.R.	1.8	1.7	1.6
All others	8.5	7.1	19.0

[1]—Includes United States Maritime Commission owned tonnage transferred to foreign flags under lend leas or other agreements, but excluded from such foreign flags.

U. S. POSTWAR MERCHANT FLEET

General Quality of Oceangoing Vessels

As of June 30, 1947

(Number of Vessels—DWT in Millions)

Vessel Type	No. of Ships	Percent	Deadweight Tons	Percent
Total	4,202	100	44.2	100
Long-Range	1,139	27	14.3	32
Emergency	2,581	62	25.7	58
Prewar	482	11	4.2	10

SOURCE: Research Division, United States Maritime Commission.

COMPARISON BETWEEN WORLD POSTWAR AND PREWAR

Deadweight Tonnage by General Types of Vessels

(In millions of tons deadweight)

Vessel Type	September 1, 1939	June 30, 1947	Percent Increase	Change Decrease
All Types	80.60	98.71	22	..
Dry Cargo	63.69	75.58	19	..
Freighter	53.76	70.14	30	..
Combination	9.93	5.44	..	45
Tanker	16.91	23.13	37	..

SOURCE: Research Division, United States Maritime Commission.

U. S. Postwar Merchant Fleet

General Quality of Vessels Estimated as Required for Operation—Foreign and Domestic Oceangoing Trades

(In Thousands of Deadweight Tons)

Estimates made as of June 30, 1947

Vessel Type	Total		No. of Ships		Deadweight Tons	
	No.	Tons	Foreign	Domestic	Foreign	Domestic
Total	1,044	11,393	491	553	5,132	6,261
U.S.M.C. Construction	969	10,732	473	496	4,993	5,739
Long-Range	854	9,638	426	428	4,483	5,155
Dry Cargo	444	4,620	334	110	3,408	1,212
Tanker	266	3,917	33	233	554	3,363
Indicated Needs	144	1,101	59	85	521	580
Emergency	115	1,094	47	68	510	584
Dry Cargo	111	1,064	47	64	510	554
Tanker	4	30	..	4	.....	30
Other than U.S.M.C. Construction	75	661	18	57	139	522
Dry Cargo	58	431	18	40	139	292
Tanker	17	230	...	17	.....	230

Source: Research Division, United States Maritime Commission.

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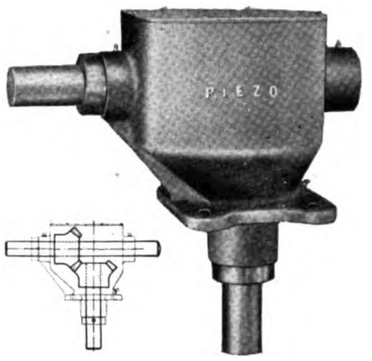

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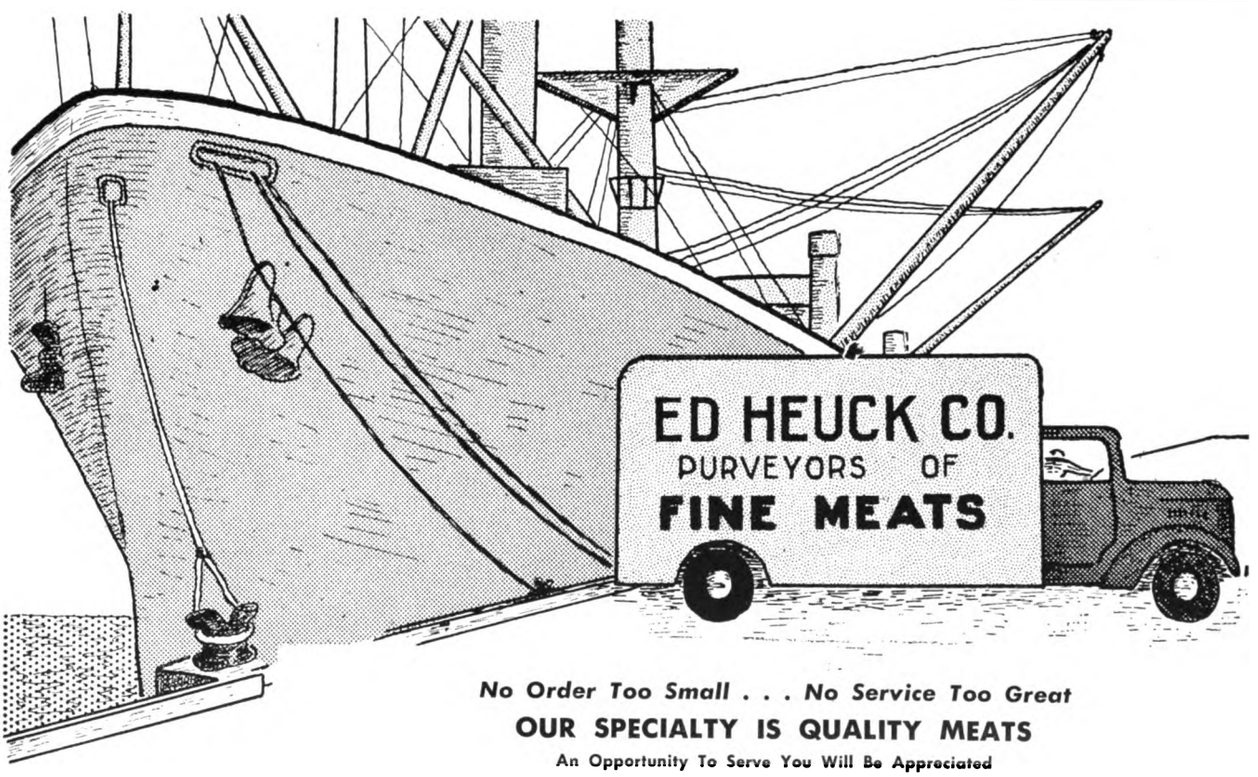

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MERCHANT FLEETS OF THE WORLD AS OF JUNE 30, 1947

Number, Gross and Deadweight Tonnage of Seagoing Steam and Motor Merchant Vessels of 1,000 Gross Tons and Over

(Excludes vessels on the Great Lakes and Inland Waterways and Special Types such as channel vessels, ice breakers, cable ships, etc. and merchant vessels owned by any military force.)

(Tonnage in Thousands)

Flag	Total — All Types			TYPE OF VESSEL																
				Combination			Combination Refrigerated			Freighters			Refrigerated			Bulk Carriers			Tankers (Whaling Tankers Incl.)		
	No.	Gross Tons	DWT. Tons	No.	Gross Tons	DWT. Tons	No.	Gross Tons	DWT. Tons	No.	Gross Tons	DWT. Tons	No.	Gross Tons	DWT. Tons	No.	Gross Tons	DWT. Tons	No.	Gross Tons	DWT. Tons
Grand Total—All Flags	12,370	70,420.8	98,709.9	958	6,579.0	4,981.2	57	554.6	458.2	8,596	45,166.6	65,918.1	227	1,417.6	1,567.2	563	1,670.5	2,659.0	1,969	15,032.5	23,126.2
United States	4,202	30,901.4	44,203.4	98	1,043.1	783.4	10	66.7	44.2	3,162	21,918.8	30,910.7	49	282.9	296.9	82	436.0	755.4	801	7,153.9	11,412.8
British Empire	2,988	17,430.4	23,214.8	314	2,604.9	1,846.1	31	414.1	351.8	1,823	9,737.9	14,413.1	106	894.0	1,020.2	247	586.1	908.0	467	3,193.4	4,675.6
United Kingdom	2,464	15,176.0	20,135.3	224	2,257.3	1,585.5	29	401.7	344.1	1,476	8,111.0	11,986.4	104	886.4	1,012.7	198	480.0	748.9	433	3,039.6	4,457.7
Canada	228	1,191.9	1,620.6	26	95.0	39.0	1	8.2	4.6	155	937.7	1,357.1				22	40.3	60.9	24	110.7	159.0
Australia	115	399.3	542.9	18	107.1	72.9				81	250.9	409.6				15	37.3	55.3	1	4.0	5.1
New Zealand	38	111.8	126.2	7	27.5	9.6	1	4.2	3.1	22	63.1	90.5				7	15.6	21.9	1	1.4	1.1
India	56	251.6	379.8	10	42.1	58.0				39	173.1	265.1				2	9.0	15.7	5	27.4	41.0
Union of South Africa	13	72.6	105.6	1	1.4	1.7				12	71.2	103.9									
Other	74	227.2	304.4	28	74.5	79.4				38	130.9	200.5	2	7.6	7.5	3	3.9	5.3	3	10.3	11.7
Argentina	96	526.2	744.7	8	34.2	22.1	1	9.6	8.2	51	293.2	447.6	2	4.1	5.0	2	3.1	4.5	32	182.0	257.3
Belgium	61	320.5	460.6	3	23.0	27.8				49	245.2	353.7				3	4.8	7.5	6	47.5	71.6
Bolivia	1	4.9	8.0							1	4.9	8.0									
Brazil	153	543.2	744.7	35	137.2	137.2				103	360.3	540.5				7	12.1	18.6	8	33.6	48.4
Bulgaria	1	2.7	3.5							1	2.7	3.5									
Chile	46	154.8	199.1	13	52.8	57.2				17	62.0	83.2				13	30.7	46.6	3	9.3	12.1
China	172	441.3	619.9	17	47.5	32.8				118	308.2	464.0	3	10.0	14.4	12	24.6	36.1	22	51.0	72.6
Colombia	11	36.3	49.0							10	34.3	45.9							1	2.0	3.1
Costa Rica	1	1.1	1.5							1	1.1	1.5									
Cuba	7	10.6	12.0	1	2.5	2.1				6	8.1	9.9									
Denmark	256	850.2	1,267.9	29	88.2	83.7	3	4.0	4.7	191	620.8	972.9	8	17.3	20.5	14	31.4	49.9	11	88.5	136.2
Ecuador	1	1.1	1.3							1	1.1	1.3									
Egypt	13	52.1	58.5	3	8.2	10.0				8	33.7	33.3				1	4.3	7.9	1	5.9	7.3
Eire	11	25.3	38.9	1	1.5	1.7				10	23.8	37.2									
Estonia	14	22.4	31.9	2	3.2	1.9				9	13.9	21.8				3	5.3	8.2			
Finland	127	269.6	403.0	8	15.1	7.7				114	235.4	366.3				2	3.9	5.3	3	15.2	23.7
France	352	1,963.5	2,459.5	48	470.8	285.5	3	29.6	25.0	221	1,066.6	1,585.4	15	49.7	40.5	32	94.9	141.5	33	251.9	381.6
Germany	128	383.3	557.7	12	59.2	58.0				99	261.5	406.5	2	6.7	8.1	10	21.7	32.9	5	34.2	52.2
Greece	232	1,236.8	1,899.7	7	30.6	21.3				211	1,156.7	1,798.8				9	26.2	44.1	5	23.3	35.5
Greenland	1	1.1	.9	1	1.1	.9															
Honduras	54	280.8	385.9				6	25.5	20.5	42	231.4	333.9	4	9.8	10.5				2	14.1	21.0
Hungary	1	1.0	1.5							1	1.0	1.5									
Iceland	6	9.0	10.0	2	2.6	2.2	1	1.6	1.5	3	4.8	6.3									
Italy	237	1,401.4	1,901.3	21	219.5	111.7				174	915.6	1,386.0				4	15.5	25.8	38	250.8	377.8
Japan	271	927.6	1,179.1	60	293.4	229.3				199	581.0	874.0				2	3.9	5.3	10	49.3	70.5
Latvia	19	47.5	74.9							19	47.5	74.9									
Lebanon	1	3.1	5.2							1	3.1	5.2									
Mexico	19	93.0	140.2	1	2.9	3.6				5	10.5	14.0				1	5.5	8.0	12	74.1	114.6
Morocco	1	5.0	7.8							1	5.0	7.8									
Netherlands	393	2,224.4	2,933.7	72	505.5	461.4				238	1,299.0	1,885.3	1	1.7	3.0	2	8.3	13.3	80	409.9	570.7
Nicaragua	1	1.1	1.6							1	1.1	1.6									
Norway	699	3,435.3	5,219.3	17	52.5	36.1	2	3.5	2.3	451	1,635.1	2,556.1	12	39.8	39.6	20	47.8	74.5	197	1,656.6	2,510.7
Palestine	5	9.8	14.3	1	1.3	.7				4	8.5	13.6									
Panama	337	1,954.9	2,930.7	6	41.1	26.0				193	1,000.7	1,512.6	14	64.0	62.4	22	83.9	123.3	102	765.2	1,206.4
Peru	17	70.1	92.0	2	9.4	8.0				13	55.1	75.1				1	2.8	4.6	1	2.8	4.3
Philippines	23	78.9	110.8	6	14.1	13.0				16	62.5	94.2				1	2.3	3.6			
Poland	29	111.7	137.2	2	25.3	10.5				24	80.6	118.4				3	5.8	8.3			
Portugal	73	308.1	427.8	17	96.3	94.2				49	178.9	284.1							7	32.9	49.5
Rumania	6	27.0	18.4	4	22.5	12.7				2	4.5	5.7									
Spain	263	898.0	1,278.1	32	134.1	119.0				195	607.3	939.9				13	32.7	48.2	23	123.9	171.0
Sweden	480	1,569.1	2,387.3	32	183.6	180.3				368	913.6	1,487.5	2	6.8	7.1	41	141.1	219.5	37	324.0	492.9
Switzerland	7	34.9	53.4							5	24.1	35.4				1	4.4	8.0	1	6.4	10.0
Siam	1	1.3	1.0	1	1.3	1.0															
Turkey	64	173.2	217.4	20	64.8	57.2				41	99.9	148.1				1	1.2	1.6	2	7.3	10.5
Uruguay	7	47.9	73.4	2	10.2	11.3				3	17.1	28.5							2	20.6	33.6
U.S.S.R.	417	1,306.3	1,780.9	57	271.3	219.3				307	848.9	1,291.0	9	30.8	39.0	13	26.1	40.7	31	129.2	190.9
Venezuela	32	81.8	111.0	3	4.2	4.3				3	3.9	4.9							26	73.7	101.8
Yugoslavia	33	139.8	235.2							32	135.7	227.4				1	4.1	7.8			
United States Maritime Commission owned tonnage transferred to the following flags under lend-lease or other agreements and still remaining under these registries by subsequent arrangement. For purposes of this table they have been excluded from these registries.																					
Total	272	1,809.1	2,558.9	4	59.8	30.0				256	1,663.0	2,394.6				4	16.0	23.3	8	70.3	111.0
China	10	71.9	107.4							10	71.9	107.6									
United Kingdom	166	1,086.7	1,517.6	1	8.1	10.4				163	1,074.1	1,500.8				2	4.5	6.4			
U.S.S.R.	94	603.4	919.2	1	4.6	4.9				83	517.0	786.4				2	11.5	16.9	8	70.3	111.0
Italy	2	47.1	14.7	2	47.1	14.7															

Source: United States Maritime Commission Research Division November 28, 1947

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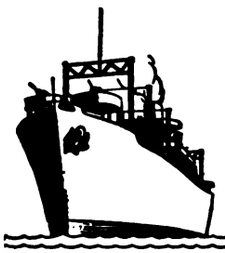

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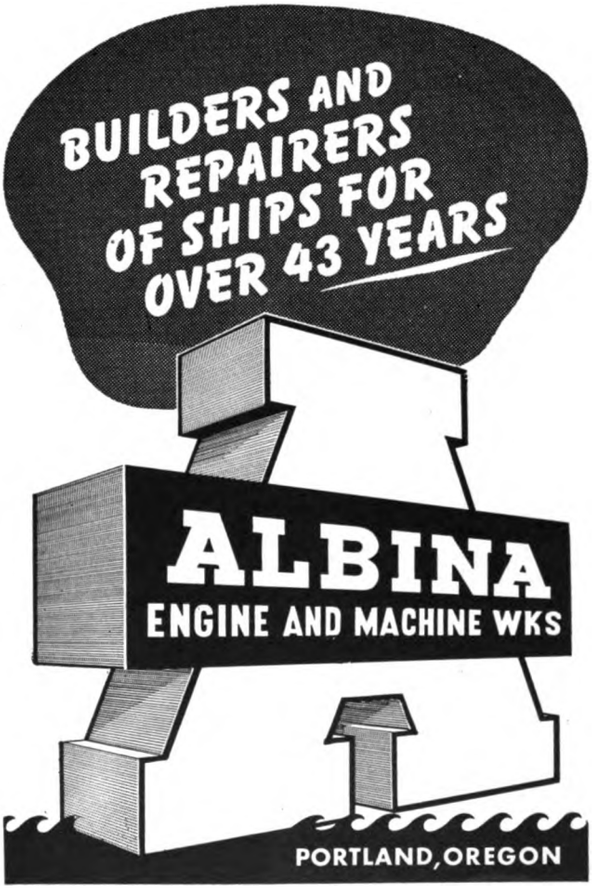

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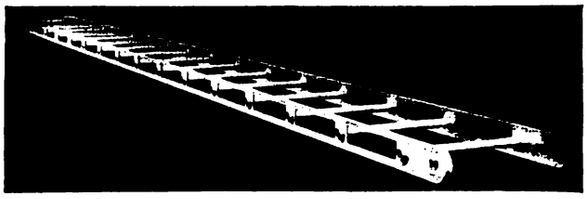

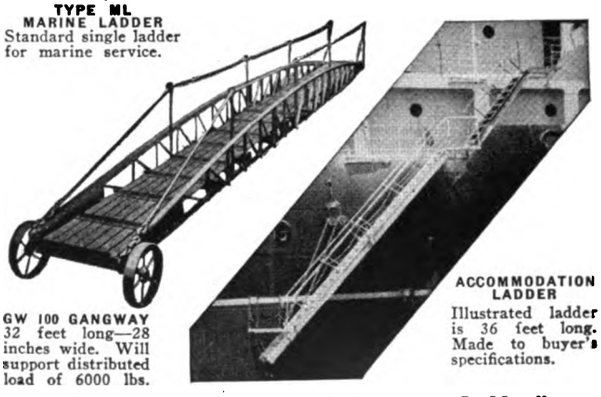

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WORLD MERCHANT FLEET

MERCHANT TANKER FLEETS OF THE WORLD — PREWAR AND POSTWAR

Number and Deadweight Tonnage of Seagoing Steam and Motor Merchant Tankers of 1,000 Gross Tons and Over Arranged by Flag of Registry and Specified Dates

(Excludes Vessels on the Great Lakes and Inland Waterways and Those Owned by any Armed Force)

Flag	September 1, 1939		June 30, 1945		June 30, 1946		December 31, 1946		June 30, 1947		September 30, 1947	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
Grand Total All Flags	1,661	16,912,100	1,892	22,095,900	1,981	23,234,600	1,984	23,216,800	1,969	23,126,200	1,964	23,083,100
United States	384	4,258,100	866[1]	12,066,000	959[1]	13,243,900	904[1]	12,730,400	801[1]	11,412,800	742[1]	10,593,700
British Empire	477	4,760,800	427	4,085,000	441	4,229,800	455	4,454,300	467	4,675,600	481	4,864,700
United Kingdom	431	4,294,500	378	3,756,800	401	3,968,100	419	4,223,400	433	4,457,700	444	4,642,300
Canada	14	139,300	38	246,200	30	202,800	26	172,000	24	159,000	24	159,000
Australia	2	14,400	1	5,100	1	5,100	1	5,100	1	5,100	1	5,100
New Zealand	1	1,100	1	1,100	1	1,100	1	1,100	1	1,100	1	1,100
India	5	41,000	5	41,000	5	41,000	5	41,000	5	41,000	5	41,000
Union of South Africa	2	31,600	1	14,600	.....	.....	.....	.....	.....	.....	.....	.....
Other Colonies	22	238,900	3	20,200	3	11,700	3	11,700	3	11,700	6	16,200
Argentina	26	195,000	27	218,400	28	235,700	30	254,300	32	257,300	33	261,500
Belgium	10	101,100	4	41,900	5	55,000	6	63,500	6	71,600	6	71,600
Brazil	1	3,800	5	45,300	5	44,000	6	45,400	8	48,400	8	48,400
Chile	.....	.....	3	12,100	3	12,100	3	12,100	3	12,100	3	12,100
China	.....	.....	.....	.....	4	46,000	20	69,800	22	72,600	22	72,600
Colombia	.....	.....	1	3,100	1	3,100	1	3,100	1	3,100	1	3,100
Cuba	1	3,200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denmark	14	165,600	3	30,600	11	136,200	11	136,200	11	136,200	12	150,600
Egypt	.....	.....	.....	.....	.....	.....	.....	.....	1	7,300	1	7,300
Finland	2	11,000	1	1,200	1	1,200	1	1,200	3	23,700	4	34,700
France	48	458,900	15	155,900	28	295,500	27	275,600	33	381,600	35	414,400
Germany	40	399,300	43	456,300	10	111,300	6	61,400	5	52,200	5	52,200
Greece	8	49,700	4	27,400	4	27,400	4	27,400	5	35,500	6	42,500
Honduras	1	11,200	1	11,100	3	27,400	3	27,400	2	21,000	2	21,000
Italy	78	582,600	22	173,100	19	147,800	23	178,700	38	377,800	39	382,900
Japan	49	615,800	58	585,900	12	77,600	11	73,000	10	70,500	10	70,500
Mexico	2	14,500	10	93,200	10	93,200	12	114,600	12	114,600	12	114,600
Netherlands	105	740,000	64	434,900	70	493,100	76	552,900	80	570,700	80	570,700
Norway	266	3,130,900	154	1,938,000	170	2,136,200	182	2,278,700	197	2,510,700	196	2,518,800
Panama	54	734,300	71	797,100	76	831,800	79	868,700	102	1,206,400	134	1,693,400
Peru	1	4,300	1	4,300	1	4,300	1	4,300	1	4,300	1	4,300
Philippines	1	7,700	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	9,300
Portugal	4	9,500	3	15,300	4	27,600	6	36,100	7	49,500	7	49,500
Rumania	3	22,600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spain	14	96,900	21	148,500	23	171,500	23	171,500	23	171,000	23	171,000
Sweden	20	257,000	38	499,900	40	526,500	36	483,900	37	492,900	37	492,900
Switzerland	.....	.....	.....	.....	.....	.....	.....	.....	1	10,000	2	17,900
Turkey	1	6,200	2	10,500	2	10,500	2	10,500	2	10,500	2	10,500
Uruguay	.....	.....	1	10,700	.....	.....	.....	.....	2	33,600	2	33,600
U.S.S.R.	27	183,200	24	140,100	28	155,800	30	180,000	31	190,900	30	181,600
Venezuela	24	88,900	23	90,100	23	90,100	26	101,800	26	101,800	26	101,800
Yugoslavia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	9,400

[1]—Includes United States Maritime Commission owned tankers transferred to the following flags under lend-lease or other agreements and still remaining under these registries by subsequent arrangement. For purposes of this table they have been excluded from these registries.

Total	.....	.....	42	315,200	45	327,800	19	226,600	8	111,000	8	111,000
United Kingdom	.....	.....	24	38,000	27	50,600	5	15,600	.....	.....	.....	.....
Netherlands	.....	.....	1	16,300	1	16,300	.....	.....	.....	.....	.....	.....
Norway	.....	.....	8	133,100	8	133,100	6	100,000	.....	.....	.....	.....
U.S.S.R.	.....	.....	9	127,800	9	127,800	8	111,000	8	111,000	8	111,000

SOURCE: United States Maritime Commission, Research Division, January 5, 1948.

AGE OF UNITED STATES VESSELS OF 500 GROSS TONS AND OVER: BY MAJOR SERVICES

Year of build	Ferry			Freight			Passenger			Tanker			Towing			All other			Total		
	Number	Gross tons	Net tons	Number	Gross tons	Net tons	Number	Gross tons	Net tons	Number	Gross tons	Net tons	Number	Gross tons	Net tons	Number	Gross tons	Net tons	Number	Gross tons	Net tons
Unknown	.....	.....	.....	54	30,903	30,903	.....	.....	.....	1	609	609	.....	.....	.....	7	6,500	6,500	62	38,012	38,012
Prior to 1900	22	22,481	14,798	75	198,621	154,537	14	26,739	16,415	13	24,015	20,570	4	2,256	1,314	6	3,964	2,904	134	278,076	210,538
1900	1	887	603	21	70,024	53,448	.....	.....	.....	.....	.....	.....	1	562	383	.....	.....	.....	23	71,473	54,434
1901	5	6,792	4,237	20	73,150	54,497	2	1,228	670	1	2,840	2,070	.....	.....	.....	5	4,017	3,696	33	88,027	65,170
1902	4	3,531	2,556	27	102,625	77,415	4	8,063	4,049	2	6,277	4,686	1	1,479	1,479	1	1,381	1,381	39	123,356	91,566
1903	5	10,746	6,950	26	101,992	75,868	1	1,879	1,010	3	7,097	5,794	1	616	418	.....	.....	.....	36	122,330	90,040
1904	7	11,315	7,275	16	37,487	29,179	1	16,111	9,644	3	1,544	1,512	1	637	309	1	559	559	29	67,653	48,478
1905	10	14,570	9,333	37	173,635	137,298	1	4,272	3,137	1	754	743	.....	.....	.....	2	1,447	1,447	51	194,678	151,958
1906	7	8,952	5,824	59	251,018	199,510	4	12,055	7,173	5	7,132	5,405	1	705	479	3	3,263	2,697	79	283,125	221,088
1907	2	2,156	1,434	59	287,970	221,494	5	13,305	7,255	1	534	436	.....	.....	.....	3	3,400	2,334	70	307,365	232,953
1908	.....	.....	.....	46	148,201	113,685	3	31,266	18,623	2	1,428	1,000	.....	.....	.....	1	663	663	52	181,558	133,971
1909	2	1,924	1,924	33	126,571	96,404	6	21,207	11,915	3	3,260	3,234	1	1,361	817	4	3,194	2,448	49	157,517	116,742
1910	4	4,226	3,285	29	139,892	106,676	5	8,017	5,030	3	2,163	2,136	.....	.....	.....	1	508	419	42	154,806	117,546
1911	4	6,757	4,220	22	74,844	57,240	4	8,202	5,182	4	4,282	3,981	.....	.....	.....	4	4,705	2,526	38	98,790	73,149
1912	2	2,638	2,208	32	58,785	44,700	7	20,758	11,282	10	24,433	16,439	.....	.....	.....	1	527	527	52	107,141	75,156
1913	6	9,145	5,924	26	86,209	61,985	5	22,156	13,117	9	45,905	30,361	.....	.....	.....	4	7,303	7,303	50	170,718	118,690
1914	8	8,074	5,380	27	58,864	44,676	1	2,662	1,427	2	13,653	9,664	1	582	396	4	3,286	2,693	43	87,121	64,236
1915	2	3,205	1,936	12	43,196	29,343	1	5,544	3,435	3	12,149	7,743	.....	.....	.....	.....	.....	.....	18	64,094	42,457
1916	.....	.....	.....	33	91,312	69,943	1	661	449	15	71,468	48,697	.....	.....	.....	1	1,510	1,199	50	164,951	120,288
1917	1	1,391	946	62	163,914	124,617	3	22,928	13,165	18	103,538	66,872	.....	.....	.....	3	3,304	3,096	87	295,075	208,696
1918	.....	.....	.....	94	268,776	181,907	3	13,797	8,300	18	104,646	67,310	.....	.....	.....	3	1,847	1,847	118	389,066	259,364
1919	.....	.....	.....	127	467,229	310,817	2	9,972	5,965	42	216,553	138,852	1	801	683	4	3,733	2,903	176	698,288	459,220
1920	2	1,546	1,050	116	461,948	301,676	2	16,400	9,855	58	242,179	154,685	1	757	410	2	1,238	853	181	724,068	468,529
1921	3	2,038	1,540	40	144,431	97,833	3	24,978	13,729	60	356,176	229,130	10	10,295	6,665	5	4,693	4,693	121	542,611	353,590
1922	9	11,547	8,145	31	62,725	48,597	1	606	338	5	12,922	8,853	.....	.....	.....	.....	.....	.....	46	87,800	65,933
1923	9	10,157	7,285	33	88,015	68,678	5	13,012	6,329	8	20,593	13,259	1	581	442	.....	.....	.....	56	132,358	95,993
1924	3	2,787	1,827	18	53,943	42,024	8	24,909	13,265	17	21,555	15,057	1	592	526	2	1,111	1,108	49	104,897	73,807
1925	15	10,588	7,969	11	50,900	40,800	6	13,846	8,224	12	14,010	13,804	.....	.....	.....	4	3,321	3,227	48	92,665	74,024
1926	11	15,615	10,440	13	40,563	32,004	3	7,548	4,570	14	17,182	12,702	3	1,809	1,495	4	9,735	5,384	48	92,452	66,595
1927	12	16,857	9,903	31	72,973	59,867	8	43,689	22,641	11	29,468	20,186	2	1,241	841	3	1,757	1,589	67	165,985	115,027
1928	3	2,087	1,141	18	19,430	16,538	5	62,599	34,713	8	48,063	30,792	.....	.....	.....	1	509	509	35	132,688	83,693
1929	4	4,013	2,510	39	55,393	46,263	5	29,245	15,150	11	16,888	11,914	.....	.....	.....	6	4,718	4,425	65	110,257	80,262
1930	5	7,193	4,830	17	27,513	23,772	1	3,327	762	22	98,185	61,915	6	4,712	2,366	5	4,125	3,816	56	145,055	97,461
1931	5	6,772	4,092	8	8,087	6,703	5	46,534	25,966	12	49,904	31,525	1	1,090	741	2	1,205	820	33	113,592	69,847
1932	.....	.....	.....	10	20,208	13,940	10	93,933	46,982	8	4,391	4,391	1	513	476	1	766	647	30	119,811	66,436
1933	1	1,496	821	7	4,318	4,318	1	6,968	3,152	10	7,200	7,200	3	1,901	1,623	1	1,013	1,013	23	22,896	18,127
1934	.....	.....	.....	5	3,494	3,494	.....	.....	.....	16	15,292	13,154	1	635	560	2	1,335	1,020	24	20,756	18,228
1935	.....	.....	.....	18	12,822	12,010	1	799	799	11	24,484	17,246	1	635	560	1	655	655	32	39,395	31,270
1936	1	1,599	1,074	33	23,071	22,327	1	1,586	805	16	51,416	35,604	3	1,717	1,334	1	597	597	55	79,986	61,741
1937	3	3,395	2,446	18	26,565	20,525	1	6,576	4,097	57	128,951	90,623	2	1,627	1,546	1	1,429	813	82	168,543	120,055
1938	3	5,025	3,200	15	40,184	31,134	.....	.....	.....	23	86,193	56,563	4	2,299	1,511	7	6,215	4,460	52	139,916	96,868
1939	.....	.....	.....	64	71,312	59,820	2	20,042	11,850	25	51,670	35,958	3	1,989	1,187	1	506	351	95	145,519	109,166
1940	2	1,130	758	45	158,588	102,749	2	18,510	10,314	52	110,829	78,076	3	1,956	1,842	2	1,038	1,038	106	292,051	194,777
1941	4	7,232	3,053	56	268,486	163,029	3	27,780	15,480	57	159,896	110,663	2	1,200	918	.....	.....	.....	122	464,594	293,143
1942	1	569	387	501	3,554,021	2,163,822	.....	.....	.....	68	346,577	218,155	3	2,862	929	2	1,238	1,223	575	3,905,267	2,384,516
1943	.....	.....	.....	1,150	8,021,907	4,914,930	1	8,008	4,535	224	1,887,917	1,152,095	59	65,261	21,262	3	15,214	9,555	1,437	9,998,307	6,102,377
1944	1	1,738	1,653	837	5,775,984	3,492,276	5	39,840	22,755	217	2,201,729	1,356,789	10	11,290	6,246	3	22,011	13,875	1,073	8,052,592	4,893,594
1945	1	2,769	762	703	4,675,397	2,793,005	1	12,410	8,735	183	1,545,101	948,554	2	1,517	1,410	8	20,983	11,871	898	6,258,177	3,764,337
Total	190	234,943	153,719	4,774	26,797,496	16,858,276	153	773,967	432,289	1,364	8,203,051	5,167,012	134	125,478	61,168	125	160,523	120,684	6,740	36,295,458	22,793,148

SOURCE: U. S. Treasury Depart [illegible] Customs, Merchant Marine Statistics, 1946.

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WORLD TANK SHIP FLEETS AS OF OCTOBER 1, 1947

Actual Changes in Number, Gross and Deadweight Tonnage From March 1, 1947 and September 1, 1939 (Ocean-Going Vessels 2,000 Gross Tons and Over)

Source: National Petroleum Council, based upon data secured from Research Division U.S.M.C.

Flag	Actual Changes From March 1, 1947 No.	Gross	D.W.T.	Actual Changes From September 1, 1939 No.	Gross	D.W.T.
WESTERN HEMISPHERE						
United States	—138	—1,203,489	—1,935,800	+361	+4,169,218	+6,737,300
Government	—152	—1,385,171	—2,225,600	+427	+4,076,872	+6,471,500
U.S.M.C.	—151	—1,378,154	—2,214,500	+407	+3,798,767	+6,008,700
Military	— 1	— 7,017	— 11,100	+ 20	+ 278,105	+ 462,800
Private	+ 14	+ 181,682	+ 289,800	— 66	+ 92,346	+ 265,800
Panama	+ 46	+ 447,764	+ 723,100	+ 79	+ 595,468	+ 955,700
Others						
Argentina	+ 1	+ 3,262	+ 4,200	+ 4	+ 40,433	+ 60,200
Brazil	.....	.....	.....	+ 3	+ 22,283	+ 31,800
Chile	.....	.....	.....	.....	.....	.....
Honduras	.....	.....	.....	+ 1	+ 6,448	+ 9,800
Mexico	.....	.....	.....	+ 10	+ 64,582	+ 100,100
Peru	.....	.....	.....	.....	.....	.....
Philippines	.....	.....	.....	— 1	— 5,236	— 7,700
Uruguay	+ 1	+ 10,296	+ 16,800	+ 1	+ 15,356	+ 25,900
Venezuela	.....	.....	.....	+ 2	+ 7,880	+ 12,000
Sub-Total "Others"	+ 2	+ 13,558	+ 21,000	+ 21	+ 156,982	+ 239,800
Total Western Hemisphere (Excluding Canada and Including Philippines)	— 90	— 742,167	—1,191,700	+461	+4,921,668	+7,932,800
EUROPE						
Great Britain	+ 18	+ 196,282	+ 320,300	— 6	+ 82,944	+ 85,500
Norway	+ 4	+ 65,237	+ 106,800	— 68	+ 414,890	— 608,100
Netherlands	+ 3	+ 11,128	+ 13,600	— 25	— 115,689	— 169,300
France	+ 9	+ 87,342	+ 140,600	— 11	— 43,061	— 51,800
U.S.S.R.	+ 7	+ 65,009	+ 100,800	+ 8	+ 61,646	+ 104,300
Germany	— 1	— 6,135	— 9,200	— 30	— 233,685	— 337,300
Italy	+ 9	+ 89,882	+ 146,400	— 45	— 172,501	— 244,700
Sweden	+ 1	+ 6,382	+ 9,800	+ 16	+ 154,164	+ 234,100
Others						
Belgium	.....	+ 4,726	+ 8,100	— 4	— 22,976	— 29,500
Denmark	+ 1	+ 9,185	+ 14,400	— 2	— 8,773	— 15,000
Finland	+ 3	+ 21,297	+ 33,500	+ 2	+ 14,748	+ 23,700
Greece	+ 2	+ 10,146	+ 15,100	— 1	— 3,121	— 5,600
Poland	+ 1	+ 6,487	+ 9,300	+ 1	+ 6,487	+ 9,300
Portugal	.....	+ 74	.....	+ 4	+ 26,658	+ 41,400
Roumania	.....	.....	.....	— 3	— 14,737	— 22,600
Spain	.....	+ 808	— 500	+ 8	+ 50,964	+ 69,500
Switzerland	+ 2	+ 11,571	+ 17,900	+ 2	+ 11,571	+ 17,900
Turkey	.....	.....	.....	.....	+ 2,411	+ 2,800
Yugoslavia	+ 1	+ 6,074	+ 9,400	.....	+ 2,897	+ 6,100
Sub-Total "Others"	+ 10	+ 69,918	+ 107,200	+ 7	+ 66,129	+ 98,000
Total Europe	+ 60	+ 585,045	+ 936,300	—154	— 614,949	— 889,300
JAPAN	— 1	— 2,770	— 2,500	— 38	— 392,636	— 544,000
CHINA	.....	.....	.....	+ 4	+ 30,475	+ 46,000
EGYPT	+ 1	+ 5,917	+ 7,300	+ 1	+ 5,917	+ 7,300
TOTAL WORLD FLEET	— 30	— 153,975	— 250,600	+274	+3,950,475	+6,552,800

Changes in T2-SE-A1 Equivalents from March 1, 1947 and September 1, 1939 (Ocean-Going Vessels 2,000 Gross Tons and Over)

Source: National Petroleum Council, based upon data secured from Research Division U.S.M.C.

Flag	March 1, 1947 No.	D.W.T.	As % of Mar. 1, 1947	Sept. 1, 1939 No.	D.W.T.	As % of Sept. 1, 1939
WESTERN HEMISPHERE						
United States	—104.1	—1,745,200	86.1%	+461.1	+7,730,300	348.8%
Government	—125.3	—2,100,600	76.0	+378.9	+6,352,300	2,277.7
U.S.M.C.	—125.5	—2,104,000	73.2	+342.9	+5,748,700	.....
Military	+ 0.2	+ 3,400	100.4	+ 36.0	+ 603,600	306.9
Private	+ 21.4	+ 355,400	109.3	+ 82.2	+1,378,000	149.0
Panama	+ 55.1	+ 923,700	221.9	+ 65.7	+1,101,400	289.9
Others						
Argentina	— 1.8	— 30,200	84.6	+ 1.0	+ 16,800	111.2
Brazil	+ 0.1	+ 1,700	105.6	+ 1.4	+ 23,500	38.0
Chile	.....	.....	100.0	.....	.....	100.0
Honduras	— 0.1	— 1,700	90.0	+ 0.3	+ 5,000	150.0
Mexico	+ 0.1	+ 1,700	102.0	+ 4.3	+ 72,100	714.3
Peru	.....	+ 100	100.0	.....	.....	100.0
Philippines	.....	.....	.....	— 0.3	— 5,000	.....
Uruguay	+ 1.0	+ 16,700	200.0	+ 2.0	+ 33,500	.....
Venezuela	.....	.....	100.0	+ 0.4	+ 6,700	111.1
Sub-Total "Others"	— 0.7	— 11,700	97.2	+ 9.1	+ 152,600	159.9
Total Western Hemisphere (Excluding Canada and Including Philippines)	— 49.7	— 833,200	93.9	+535.9	+8,984,300	327.9
EUROPE						
Great Britain	+ 19.6	+ 328,600	109.1	+ 15.2	+ 254,800	106.9
Norway	+ 6.6	+ 110,600	105.5	— 24.6	— 412,400	83.7
Netherlands	+ 0.6	+ 10,100	102.4	— 7.8	— 130,700	77.0
France	+ 8.0	+ 134,100	163.0	— 1.3	— 21,800	94.1
U.S.S.R.	+ 5.6	+ 93,800	175.6	+ 5.4	+ 90,500	171.1
Germany	— 0.4	— 6,700	87.1	— 15.6	— 261,500	14.8
Italy	+ 8.2	+ 137,500	178.8	— 8.4	— 140,900	68.9
Sweden	+ 0.5	+ 8,400	101.9	+ 14.2	+ 238,100	211.8
Others						
Belgium	+ 0.6	+ 10,100	120.7	— 1.3	— 21,800	72.9
Denmark	+ 0.7	+ 11,700	110.8	— 0.5	— 8,400	93.5
Finland	+ 1.5	+ 25,100	.....	+ 1.1	+ 18,400	375.0
Greece	+ 0.6	+ 10,100	154.5	— 0.3	— 5,000	85.0
Poland	+ 0.4	+ 6,700	.....	+ 0.4	+ 6,700	.....
Portugal	.....	.....	100.0	+ 2.1	+ 35,200	220.0
Roumania	.....	.....	.....	— 1.0	— 16,800	.....
Spain	— 0.1	— 1,600	98.7	+ 3.0	+ 50,400	162.5
Switzerland	+ 0.9	+ 15,100	.....	+ 0.9	+ 15,100	.....
Turkey	.....	.....	100.0	+ 0.4	+ 6,700	500.0
Yugoslavia	+ 0.4	+ 6,700	.....	+ 0.3	+ 5,000	400.0
Sub-Total "Others"	+ 5.0	+ 83,900	123.7	+ 5.1	+ 85,500	124.3
Total Europe	+ 53.7	+ 900,300	112.2	— 17.8	— 298,400	96.5
JAPAN	.....	— 100	100.0	— 24.6	— 412,500	12.8
CHINA	.....	+ 100	100.0	+ 1.9	+ 31,900	.....
EGYPT	+ 0.4	+ 6,700	.....	+ 0.4	+ 6,700	.....
TOTAL WORLD FLEET	+ 4.4	+ 73,800	100.3	+495.8	+8,312,000	163.9

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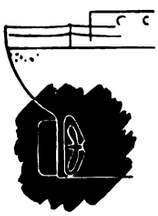
CORROSION STAYS ASHORE, WHEN APEXIOR GOES TO SEA

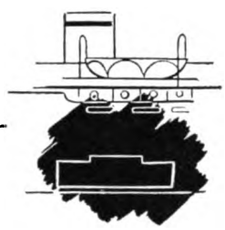
70-1-3M



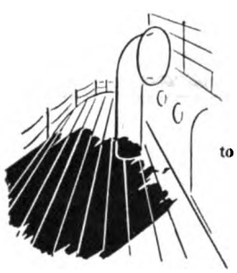
. . . ON SUBMERGED STERN HULL AREAS:

Corrosion is twice-defeated when APEXIOR NUMBER 3 covers this trouble zone with a surface insoluble in salt water or fresh, and electrically insulating to stop galvanic action — sends steel hulls into drydock sound as new — protects rudders and rudder posts, propeller blades and cones, tail shafts and struts . . . also sea chests.

. . . IN TANKS:



APEXIOR NUMBER 3 stops rusting and pitting in all salt or fresh water tanks maintained at temperatures to 140°F. — in drinking water, double-bottom reserve feed, fore and aft peak, and in cargo deep tanks carrying dry materials or salt water ballast.



. . . ON DECK:

With APEXIOR NUMBER 3 on guard, moist salt air that finds its way even to sheltered areas is powerless to attack ventilator cowl and trunk interiors, life boats, chain lockers and similar metallic surfaces.

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WORLD MERCHANT FLEET

Comparison between Postwar and Prewar COMBINATION Vessel — Deadweight Tonnage by Principal National Merchant Fleet (In millions of tons deadweight)

Country	September 1 1939 Tons	September 1 1939 Percent	June 30 1947 Tons	June 30 1947 Percent	Percent Change Increase	Percent Change Decrease
All Countries	9.93	100.0	5.44	100.0	..	45
United States	1.09	11.0	[1]0.83	15.3	..	24
Foreign	8.84	89.0	[2]4.61	84.7	..	48
Prin. Wartime Un. Nat.	5.12	51.5	3.31	60.8	..	35
Br. Empire	3.20	32.2	[3]2.19	40.2	..	32
United Kingdom	2.74	27.6	[3]1.93	35.5	..	30
Canada	0.08	0.8	0.04	0.7	..	50
Other	0.38	3.8	0.22	4.0	..	42
Other War. Un. Nat.	1.92	19.3	[4]1.12	20.6	..	42
Netherlands	0.81	8.2	0.46	8.5	..	43
France	0.74	7.4	0.31	5.7	..	58
Denmark	0.16	1.6	0.09	1.7	..	44
U.S.S.R.	0.12	1.2	[4]0.22	4.0	83	..
Norway	0.09	0.9	0.04	0.7	..	56
Principal Neutral	0.23	2.3	0.30	5.5	30	..
Sweden	0.12	1.2	0.18	3.3	50	..
Spain	0.11	1.1	0.12	2.2	9	..
Principal Axis	2.69	27.1	[5]0.40	7.4	..	85
Germany	1.01	10.2	0.06	1.1	..	94
Japan	0.94	9.5	0.23	4.3	..	76
Italy	0.74	7.4	[5]0.11	2.0	..	85
All Other	0.80	8.1	0.60	11.0	..	25

[1]–Includes four United States combination type vessels of 30,000 tons deadweight operated under lend-lease or special agreements.
[2]–Excludes vessels and tonnage contained in the above footnote.
[3]–Excludes one United States vessel of 10,400 tons deadweight operated under lend-lease agreement.
[4]–Excludes one United States vessel of 4,900 tons deadweight operated under lend-lease agreement.
[5]–Excludes two United States vessels of 14,700 tons deadweight operated under special agreement.
Source: Research Division, United States Maritime Commission.

Comparison between Postwar and Prewar TANKER Deadweight Tonnage by Principal National Merchant Fleets (In millions of tons deadweight)

Country	September 1 1939 Tons	September 1 1939 Percent	June 30 1947 Tons	June 30 1947 Percent	Percent Change Increase	Percent Change Decrease
All Countries	16.91	100.0	23.13	100.0	37	..
United States	4.26	25.2	[1]11.41	49.3	168	..
Foreign	12.65	74.8	[2]11.72	50.7	..	7
Prin. Wartime Un. Nat.	10.22	60.4	9.72	42.0	..	5
Brit. Empire	4.76	28.1	4.68	20.2	..	2
United Kingdom	4.29	25.3	4.46	19.3	4	..
Canada	0.14	0.8	0.16	0.7	14	..
Other	0.33	2.0	0.06	0.2	..	82
Other War. Un. Nat.	5.46	32.3	[3]5.04	21.8	..	8
Norway	3.13	18.5	2.51	10.9	..	20
Panama	0.73	4.3	1.21	5.2	66	..
Netherlands	0.74	4.4	0.57	2.5	..	23
France	0.46	2.7	0.38	1.6	..	17
Denmark	0.17	1.0	0.14	0.6	..	18
U. S. S. R.	0.18	1.1	[3]0.19	0.8	6	..
Greece	0.05	0.3	0.04	0.2	..	20
Principal Neutral	0.35	2.1	0.66	2.9	89	..
Sweden	0.25	1.5	0.49	2.1	96	..
Spain	0.10	0.6	0.17	0.8	70	..
Principal Axis	1.60	9.5	0.50	2.2	..	69
Japan	0.62	3.7	0.07	0.3	..	89
Italy	0.58	3.4	0.38	1.7	..	34
Germany	0.40	2.4	0.05	0.2	..	88
All Other	0.48	2.8	0.84	3.6	75	..

[1]–Includes 8 United States tankers of 111,000 tons deadweight operated by the U. S. S. R. under lend-lease agreement.
[2]–Excludes 8 United States tankers of 111,000 tons deadweight operated by the U. S. S. R. under lend-lease agreement.
Source: Research Division, United States Maritime Commission.

WORLD TANK SHIP FLEET AS OF OCTOBER 1, 1947
Actual Number, Gross and Deadweight Tonnage and T2-SE-A1 Equivalent Tonnage (Ocean-Going Vessels 2,000 Gross Tons and Over)
Source: National Petroleum Council, based upon data secured from Research Division, U.S.M.C.

Flag	October 1, 1947 No.	Gross Tons	Deadweight Tons	AVERAGE Dead-weight	AVERAGE Speed	T2-SE-A1 Equivalent No.	Deadweight Tons	% of World
WESTERN HEMISPHERE								
United States	744	6,995,223	11,171,400	15,015	14.07	646.4	10,836,900	50.9
Government	449	4,262,497	6,754,100	15,043	14.26	396.3	6,644,000	31.2
U. S. M. C.	407	3,798,767	6,008,700	14,763	13.87	342.9	5,748,700	27.0
Military	42	463,730	745,400	17,748	17.43	53.4	895,300	4.2
Private	295	2,732,726	4,417,300	14,974	13.76	250.1	4,192,900	19.7
Panama	132	1,063,528	1,688,500	12,791	14.44	100.3	1,681,500	7.9
Others								
Argentine	28	178,235	251,400	8,978	9.52	9.9	166,000	0.8
Brazil	5	30,183	44,000	8,800	10.21	1.9	31,900	0.1
Chile	2	7,586	9,600	9,600	11.00	0.4	6,700	....
Honduras	2	14,071	21,000	10,500	11.29	0.9	15,100	0.1
Mexico	12	74,122	114,600	9,550	10.50	5.0	83,600	0.4
Peru	1	2,820	4,300	4,300	10.00	0.2	3,400	....
Philippines	....	....	....	....	....	....	....	....
Uruguay	2	20,592	33,600	16,800	14.50	2.0	33,500	0.2
Venezuela	25	72,092	99,300	3,972	9.86	4.0	67,000	0.3
Sub-Total "Others"	77	399,701	577,800	7,504	10.21	24.3	407,400	1.9
Total Western Hemisphere (excluding Canada & including Philippines)	953	8,458,452	13,437,700	14,100	13.95	771.0	12,925,800	60.7
EUROPE								
Great Britain	436	3,252,332	4,789,500	10,985	11.88	234.1	3,924,700	18.4
Norway	195	1,658,333	2,517,300	12,909	12.20	126.3	2,117,400	9.9
Netherlands	80	409,919	570,700	7,134	11.14	26.1	437,600	2.1
France	33	269,155	410,500	12,439	12.27	20.7	347,000	1.6
U. S. S. R.	25	174,696	266,800	10,672	11.83	13.0	217,900	1.0
Germany	4	32,989	50,400	12,600	12.87	2.7	45,300	0.2
Italy	35	248,433	374,000	10,686	12.08	18.6	311,800	1.5
Sweden	36	322,683	491,100	13,641	13.32	26.9	451,000	2.1
Others								
Belgium	6	47,453	71,600	11,933	12.01	3.5	58,700	0.3
Denmark	11	96,597	149,400	13,581	11.79	7.2	120,700	0.6
Finland	3	21,297	33,500	11,167	10.62	1.5	25,100	0.1
Greece	6	28,235	42,500	7,083	9.84	1.7	28,500	0.1
Poland	1	6,487	9,300	9,300	10.50	0.4	6,700	....
Portugal	5	29,269	44,600	8,920	11.85	2.2	36,900	0.2
Spain	21	121,835	168,800	8,038	11.30	7.8	130,800	0.7
Switzerland	2	11,571	17,900	8,950	10.28	0.9	15,100	0.1
Turkey	1	6,134	9,000	9,000	14.00	0.5	8,400	....
Yugoslavia	1	6,074	9,400	9,400	11.50	0.4	6,700	....
Sub-Total "Others"	57	374,952	556,000	9,754	11.40	26.1	437,600	2.1
Total Europe	901	6,743,492	10,026,300	11,127	11.99	494.5	8,290,300	38.9
JAPAN	9	47,805	68,500	7,611	12.65	3.6	60,300	0.3
CHINA	4	30,475	46,000	11,500	10.00	1.9	31,900	0.1
EGYPT	1	5,917	7,300	7,300	13.00	0.4	6,700	....
TOTAL WORLD FLEET	1,868	15,286,141	23,585,800	12,626	13.10	1,271.4	21,315,000	100.0

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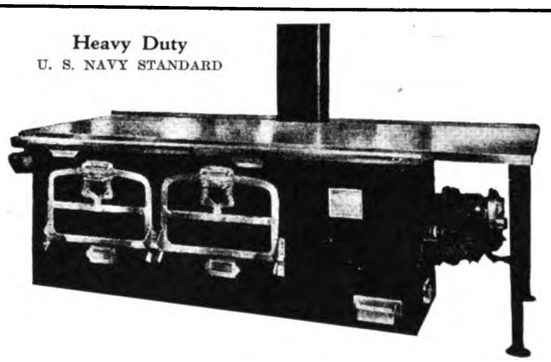

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WORLD MERCHANT FLEET

Comparison between Postwar and Prewar Deadweight Tonnage by Principal National Merchant Fleets

(In millions of tons deadweight)

Country	September 1, 1939		June 30, 1947		Percent Change	
	Tons	Percent	Tons	Percent	Increase	Decrease
All Countries	80.60	100.0	98.71	100.0	22	...
United States	11.68	14.5	[1] 44.20	44.8	278	...
Foreign	68.92	85.5	[2] 54.51	55.2	...	21
Prin. Wartime Un. Nat.	44.47	55.2	41.71	42.3	...	6
British Empire	24.05	29.8	[3] 23.22	23.5	...	3
United Kingdom	21.85	27.1	[3] 20.14	20.4	...	8
Canada	0.32	0.4	1.62	1.6	406	...
Other	1.88	2.3	1.46	1.5	...	22
Other War. Un. Nat.	20.42	25.4	[4] 18.49	18.8	...	9
Norway	6.93	8.6	5.22	5.3	...	25
Netherlands	3.42	4.2	2.93	3.0	...	14
France	3.00	3.7	2.46	2.5	...	18
Panama	1.10	1.4	2.93	3.0	166	...
U.S.S.R.	1.60	2.0	[4] 1.78	1.8	11	...
Denmark	1.58	2.0	1.27	1.3	...	20
Greece	2.79	3.5	1.90	1.9	...	32
Principal Neutral	3.08	3.8	3.67	3.7	19	...
Sweden	2.03	2.5	2.39	2.4	18	...
Spain	1.05	1.3	1.28	1.3	22	...
Principal Axis	17.06	21.2	[5] 4.04	4.1	...	76
Japan	7.14	8.9	1.18	1.2	...	83
Germany	5.18	6.4	0.56	0.6	...	89
Italy	3.91	4.9	[5] 1.90	1.9	...	51
Finland	0.83	1.0	0.40	0.4	...	52
All Other	4.31	5.3	[6] 5.09	5.1	18	...

[1]—Includes 272 United States vessels aggregating 2,558,900 tons deadweight operated by the United Kingdom, U.S.S.R., China, and Italy under lend-lease or special agreements.
[2]—Excludes vessels and tonnage contained in above footnote.
[3]—Excludes 166 United States vessels aggregating 1,517,600 tons deadweight operated by the United Kingdom under lend-lease agreement.
[4]—Excludes 94 United States vessels aggregating 919,200 tons deadweight operated by the U.S.S.R under lend-lease agreement.
[5]—Excludes 2 United States vessels aggregating 14,700 tons deadweight operated by Italy under special agreement.
[6]—Excludes 10 United States vessels aggregating 107,400 tons deadweight operated by China under lend-lease agreement.
SOURCE: Research Division, United States Maritime Commission.

Comparison between Postwar and Prewar FREIGHTER Deadweight Tonnage by Principal National Merchant Fleets

(In millions of tons deadweight)

Country	September 1, 1939		June 30, 1947		Percent Change	
	Tons	Percent	Tons	Percent	Increase	Decrease
All Countries	53.76	100.0	70.14	100.0	30	...
United States	6.33	11.8	[1] 31.96	45.6	405	...
Foreign	47.43	88.2	[2] 38.18	54.4	.....	20
Prin. Wartime Un. Nat.	29.08	54.0	28.64	40.8	.....	2
British Empire	16.09	29.9	[3] 16.35	23.3	2	...
United Kingdom	14.82	27.6	[3] 13.75	19.6	.....	7
Canada	0.10	0.2	1.42	2.0	1320	...
Other	1.17	2.1	1.18	1.7	1	...
Other War. Un. Nat.	12.99	24.1	[4] 12.29	17.5	.....	5
Norway	3.71	6.9	2.67	3.8	.....	28
Greece	2.70	5.0	1.84	2.6	.....	32
Netherlands	1.87	3.5	1.90	2.7	2	...
France	1.80	3.3	1.77	2.5	.....	2
U.S.S.R.	1.30	2.4	[4] 1.37	2.0	5	...
Denmark	1.25	2.3	1.04	1.5	.....	17
Panama	0.36	0.7	1.70	2.4	372	...
Principal Neutral	2.50	4.7	2.71	3.9	8	...
Sweden	1.66	3.1	1.72	2.5	4	...
Spain	0.84	1.6	0.99	1.4	18	...
Principal Axis	12.75	23.7	3.11	4.4	.....	76
Japan	5.58	10.4	0.88	1.3	.....	84
Germany	3.77	7.0	0.45	0.6	.....	88
Italy	2.59	4.8	1.41	2.0	.....	46
Finland	0.81	1.5	0.37	0.5	.....	54
All Other	3.10	5.8	[5] 3.72	5.3	20	...

[1]—Includes 260 United States dry cargo freighters lend-leased to the United Kingdom, U.S.S.R. and China aggregating 2,417,900 tons deadweight.
[2]—Excludes 260 United States dry cargo freighters lend-leased to United Kingdom, U.S.S.R. and China aggregating 2,417,900 tons deadweight.
[3]—Excludes 165 United States dry cargo freighters under lend-lease agreement aggregating 1,507,200 tons deadweight.
[4]—Excludes 85 United States dry cargo freighters under lend-lease agreement aggregating 803,300 tons deadweight.
[5]—Excludes 10 United States dry cargo freighters under lend-lease agreement to China aggregating 107,400 tons deadweight.
SOURCE: Research Division, United States Maritime Commission.

MISCELLANEOUS

U. S. Oceanborne Foreign Traffic Amount Carried in Tankers and Percent of U. S. Flag Vessel Participation

Calendar Years 1939, 1946, and 1947 (Estimated)
(Millions of Long Tons)

	1947		1946		1939	
	Tons	Percent Carried in U.S. Vessels	Tons	Percent Carried in U.S. Vessels	Tons	Percent Carried in U.S. Vessels
Total	39	65	33	65	31	18
Exports	12	44	12	44	21	9
Imports	27	74	21	76	10	38

SOURCE: Bureau of the Census; last five months of 1947 estimated by Research Division, United States Maritime Commission.

Summary of Sales of U. S. Maritime Commission Vessels to January 1, 1948, Not Included Under the Terms of the Merchant Ship Sales Act of 1946, as Amended.

NUMBER OF VESSELS SOLD FOR OPERATION	179
NUMBER OF VESSELS SOLD FOR NON-OPERATION	14
NUMBER OF VESSELS SOLD FOR SCRAPPING	457
NUMBER OF VESSELS SOLD TO OTHER GOVERNMENT AGENCIES	7
NUMBER OF VESSELS ABANDONED OR TRANSFERRED WITHOUT EXCHANGE OF FUNDS	20
TOTAL NUMBER OF VESSELS DISPOSED OF	677
DEADWEIGHT TONNAGE SOLD FOR OPERATION	885,972
LIGHTWEIGHT TONNAGE SOLD FOR NON-OPERATION	52,765
LIGHTWEIGHT TONNAGE SOLD FOR SCRAPPING	1,303,704
AMOUNT RECEIVED FROM SALES FOR OPERATION	$26,845,528.97
AMOUNT RECEIVED FROM SALES FOR NON-OPERATION	563,689.00
AMOUNT RECEIVED FROM SALES FOR SCRAPPING	9,417,754.61
AMOUNT RECEIVED FROM SALES TO OTHER GOVERNMENT AGENCIES	24,283.00
AMOUNT RECEIVED FROM FORFEITURES	245,942.00
AMOUNT RECEIVED FROM CUSTODY CHARGES, ETC.	42,362.10
TOTAL AMOUNT RECEIVED	37,139,559.68
AVERAGE PRICE RECEIVED PER DEADWEIGHT TON (OPERATION)	$ 30.30
AVERAGE PRICE RECEIVED PER LIGHTWEIGHT TON (NON-OPERATION)	10.68
AVERAGE PRICE RECEIVED PER LIGHTWEIGHT TON (SCRAPPING)	7.22
TOTAL LIGHTWEIGHT TONNAGE SCRAPPED TO DATE	507,019

Source: U. S. Maritime Commission, Bureau of Purchase and Sales.

Commercial Traffic Through the Panama Canal — Summary, Fiscal Years Ended June 30: 1935 to 1946

Item	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946
Number of transits	5,180	5,382	5,387	5,524	5,903	5,370	4,727	2,688	1,822	1,562	1,939	3,747
Measurement tonnage registered:												
Gross (thousands)	33,013	33,130	32,575	32,918	34,583	31,086	[1]	[1]	[1]	[1]	[1]	[1]
Net (thousands)	19,609	19,644	19,303	19,622	20,745	18,643	[1]	[1]	[1]	[1]	[1]	[1]
Panama Canal, net (thousands)[2]	25,720	25,923	25,430	25,950	24,170	24,144	20,643	14,187	11,030	11,593	19,369	22,469
United States equivalent (thousands)	19,429	19,481	19,237	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]
Tons of cargo, total (thousands of long tons)	25,310	26,506	28,108	27,386	27,867	27,299	24,951	13,608	10,600	7,003	8,604	14,978
Atlantic to Pacific	7,530	8,250	9,896	9,689	9,011	9,820	9,488	4,685	4,945	3,354	4,235	6,118
Pacific to Atlantic	17,780	18,256	18,213	17,697	18,855	17,479	15,462	8,923	5,655	3,649	4,369	8,860

[1]—Not available for publication.
[2]—As estimated or measured under rules which became effective Mar. 1, 1939.
[3]—Not available. Application of United States rules of measurement of vessels abolished.
Source: The Panama Canal, Annual Report of the Governor.

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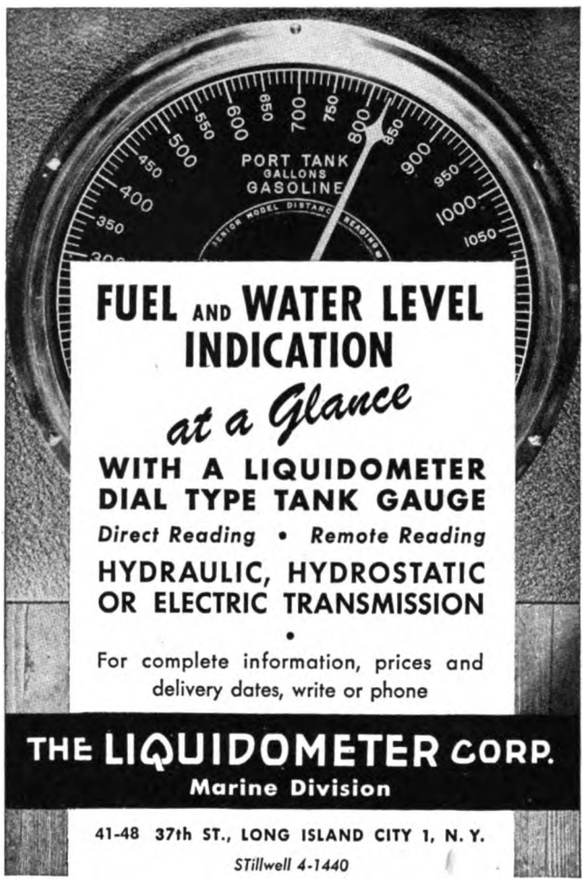

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WORLD SHIPBUILDING

Table Showing the Number and Gross Tonnage of Merchant Vessels of 100 Tons Gross and Upwards Launched in the Various Countries of the World During the Years 1915-1947

Year	Great Britain and N. Ireland*		British Dominions, Etc.				Belgium		Denmark		France		Germany		Holland		Italy		Japan		Norway		Spain		Sweden		United States of America				*Other-Countries		-Total-		Year
			Coasts		Canadian Lake Ports																						Coast		Great Lakes						
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	
1915	327	650,919	27	13,289	4	8,725	No Returns		23	45,198	6	25,402	No Returns		120	113,075	30	22,132	26	49,408	59	62,070	5	12,765	27	20,319	76	157,167	8	20,293	5	876	743	1,201,638	1915
1916	306	608,235	36	22,577	4	8,994	No Returns		28	35,277	9	42,752	No Returns		201	180,197	10	56,654	55	145,624	52	42,458	6	10,847	34	26,709	167	384,899	44	119,348	12	3,449	964	1,688,080	1916
1917	286	1,162,896	80	66,475	25	27,996	No Returns		23	20,445	6	18,828	No Returns		146	148,779	11	38,906	104	350,141	44	46,103	10	22,777	34	26,760	266	821,115	60	176,804	17	9,761	1,112	2,937,786	1917
1918	301	1,348,120	184	230,514	22	49,390	No Returns		13	26,150	3	13,715	No Returns		74	74,026	15	60,791	198	489,924	51	47,723	18	17,389	36	39,583	741	2,602,153	188	430,877	22	17,089	1,866	5,447,444	1918
1919	612	1,620,442	235	298,495	28	60,233	2	2,433	46	37,766	34	32,633	No Returns		100	137,086	32	82,713	133	611,883	82	57,578	41	52,609	53	50,971	852	3,579,826	199	495,559	34	24,322	2,483	7,144,549	1919
1920	618	2,055,624	90	174,557	13	29,087	5	8,371	30	60,669	50	93,449	No Returns		99	183,149	82	133,190	140	456,642	30	38,855	13	45,950	46	63,823	467	2,348,725	42	127,528	34	42,047	1,759	5,861,666	1920
1921	426	1,538,052	49	118,303	5	11,372	3	17,909	37	77,238	65	210,663	242	509,064	98	232,402	86	170,948	43	227,425	35	51,458	11	47,256	27	65,911	167	1,004,093	7	11,284	78	63,465	1,379	4,356,843	1921
1922	235	1,031,081	37	53,347	2	9,418	4	7,497	23	41,016	62	184,509	187	525,829	60	163,132	42	101,177	49	83,419	23	32,391	2	7,776	14	30,038	55	97,161	4	21,977	53	77,316	852	2,467,084	1922
1923	222	645,651	41	37,072	3	4,191	5	1,102	24	49,479	27	96,644	109	345,062	35	65,632	21	66,523	44	72,475	48	42,619	7	4,488	10	20,118	69	96,491	14	76,326	22	19,308	701	1,643,181	1923
1924	494	1,439,885	29	29,815	2	15,064	2	3,997	33	63,937	26	79,685	108	175,113	41	63,627	19	82,526	31	72,757	34	25,139	2	3,859	12	31,211	71	90,155	8	49,308	12	21,673	924	2,247,751	1924
1925	342	1,084,633	47	32,220	4	13,858	3	4,206	21	73,268	35	75,569	121	406,374	47	78,823	31	142,046	23	55,784	48	28,805	1	127	17	53,750	94	78,766	7	50,010	14	15,165	855	2,193,404	1925
1926	197	639,568	39	22,842	3	10,836	8	3,627	25	72,108	34	121,342	60	180,548	47	93,671	27	220,021	26	52,405	25	9,237	6	25,671	14	53,518	73	115,217	5	35,396	11	18,970	600	1,674,977	1926
1927	371	1,225,873	24	20,119	5	10,131	8	4,693	20	72,038	22	44,335	105	289,622	68	119,790	25	101,076	19	42,359	12	5,363	5	22,899	18	67,361	58	124,270	8	54,948	34	80,802	802	2,285,679	1927
1928	420	1,445,920	47	22,959	1	734	3	16,243	31	138,712	20	81,416	81	376,416	74	166,754	29	58,640	37	103,663	12	10,401	7	11,852	20	106,912	57	86,092	6	5,265	24	67,260	869	2,699,239	1928
1929	489	1,522,623	47	21,327	3	11,814	4	8,361	34	111,496	16	81,607	85	249,077	77	186,517	32	71,497	40	164,457	51	39,604	8	37,023	29	107,246	59	100,632	4	25,431	34	54,498	1,012	2,793,210	1929
1930	481	1,478,563	77	43,292	2	458	5	12,265	38	137,230	18	100,917	92	245,557	74	153,072	36	87,709	37	151,272	53	53,843	13	25,213	31	131,781	92	214,012	8	32,675	27	21,613	1,084	2,889,472	1930
1931	148	502,487	31	13,612	..	.....	7	897	30	125,974	22	103,419	58	103,934	99	120,296	33	165,048	42	83,721	20	18,163	11	48,117	20	112,703	55	202,227	2	3,638	18	12,879	596	1,617,115	1931
1932	100	187,794	14	3,424	2	1,336	7	1,537	18	22,413	23	89,310	15	80,799	30	26,232	8	47,441	44	54,422	8	11,129	3	11,132	12	43,000	18	143,559	...	.....	5	3,063	307	726,591	1932
1933	108	133,115	20	12,958	..	.....	5	4,497	19	34,016	29	34,073	43	42,195	25	35,899	3	16,560	30	74,290	7	9,718	7	18,044	14	60,860	14	10,771	...	.....	6	2,020	330	489,016	1933
1934	173	459,877	16	9,112	..	.....	4	831	21	61,729	10	15,950	57	73,733	31	46,905	6	26,638	155	152,420	12	18,857	8	18,358	12	49,542	21	24,625	...	.....	10	8,842	536	967,419	1934
1935	185	499,011	28	10,047	2	1,142	10	1,775	33	122,095	10	42,783	78	226,343	48	57,133	4	22,667	177	145,914	23	25,716	7	3,051	22	105,538	14	32,607	...	.....	8	6,258	649	1,302,080	1935
1936	328	856,257	25	6,239	..	.....	16	4,249	35	97,537	17	39,208	161	379,981	69	93,831	7	11,345	180	294,861	33	33,162	9	1,283	33	154,044	57	101,258	12	10,627	17	34,042	999	2,117,924	1936
1937	309	920,822	38	13,880	..	.....	17	17,071	26	131,411	9	26,544	174	435,608	112	183,509	6	21,918	180	451,121	38	41,993		*	38	161,008	103	195,767	20	43,678	31	46,252	1,101	2,690,580	1937
1938	267	1,030,375	59	28,151	2	1,949	21	30,197	35	158,430	7	47,290	193	480,797	142	239,845	13	93,503	146	441,720	42	54,654		*	40	166,464	62	163,114	43	38,137	47	58,967	1,119	3,033,593	1938
1939	201	629,705	41	36,142	1	450	8	22,788	31	158,644	9	44,375	109	*300,106	130	189,833	28	119,757	121	*323,775	36	46,912	1	1,050	37	210,280	94	376,419	76	45,570	18	33,618	941	2,539,424	1939
1940	229	842,910	21	18,886	..	.....	No Returns		4	*18,350	4	*21,800	No Returns		18	*36,567	10	*61,972	No Returns		5	*10,070	..	.....	31	153,727	93	528,697	74	50,713	6	10,506	495	1,754,198	1940
1941	299	1,192,782	34	90,595	..	.....	No Returns		No Returns		No Returns		No Returns		No Returns		No Returns		No Returns		No Returns		4	12,150	31	163,554	177	1,031,974	10	3,265	9	3,741	564	2,498,061	1941
1942	332	1,284,050	115	720,672	..	.....	No Returns		No Returns		No Returns		No Returns		No Returns		No Returns		No Returns		No Returns		7	5,880	36	141,568	803	5,479,766	58	191,054	8	5,715	1,359	7,828,705	1942
1943	287	1,146,006	151	1,002,850	1	3,600	No Returns		No Returns		No Returns		No Returns		No Returns		No Returns		No Returns		No Returns		12	15,543	45	146,114	1,584	11,448,360	41	131,162	1	343	2,122	13,893,978	1943
1944	363	932,164	135	692,405	2	4,800	6	*22,523	No Returns		No Returns		No Returns		No Returns		No Returns		No Returns		No Returns		8	30,934	45	157,183	1,242	9,288,156	19	50,911	2	3,234	1,822	11,182,310	1944
1945	325	898,238	56	141,893	14	4,097	5	*10,447	7	*22,466	No Returns		No Returns		No Returns		6	*9,538	No Returns		4	*5,965	11	20,147	32	112,760	842	5,839,858	38	127,723	4	4,270	1,344	7,197,402	1945
1946	371	1,133,245	58	83,019	7	2,632	13	17,451	13	39,051	20	*23,205	No Returns		23	33,290	57	61,742	No Returns		20	34,428	17	41,289	50	146,875	95	500,909	1	385	2	9,900	747	2,127,421	1946
1947	393	1,202,024	59	124,432	4	4,900	17	26,132	15	60,695	36	91,911	No Returns		65	87,801	45	62,247	No Returns		45	36,854	16	10,692	52	222,598	65	162,095	5	2,753	20	16,752	837	2,111,866	1947

Note: For the above tables the data does not include warships and includes only vessels of 100 tons gross and over that were launched during 1947, whether they were completed or under construction. Sailing vessels fitted with auxiliary power are included with steamers or motorships, according to type of engine. After 1940, non-propelled vessels launched in countries other than the United Kingdom are not included. Prior to 1938, figures relating to Great Britain and Ireland included vessels launched in Eire. Returns were not available for Germany and Austria-Hungary for 1914-18 or for Germany for 1919 and 1920. Since 1914, complete returns from Russia have been available only for the years 1926-29. For 1937 and 1938, information concerning Spain may not be complete. Since June 1939, returns are similarly not available for Danzig, Germany, Hungary, Japan, or Poland. For the period 1939-1945, information for Belgium, Denmark, Finland, France, Holland, Italy, and Norway is limited practically to the first quarter of 1940.

Source: Lloyd's Register of Shipping, Annual Summary for 1947.

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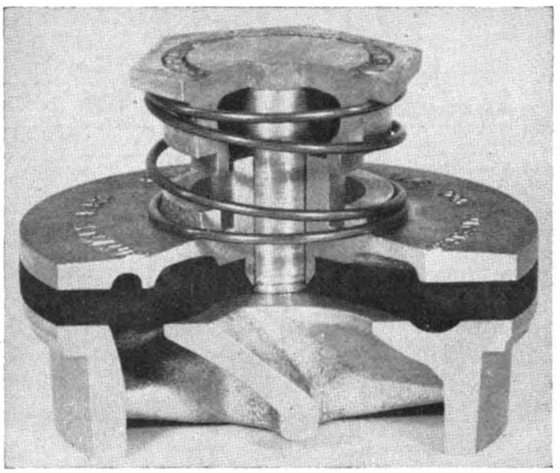

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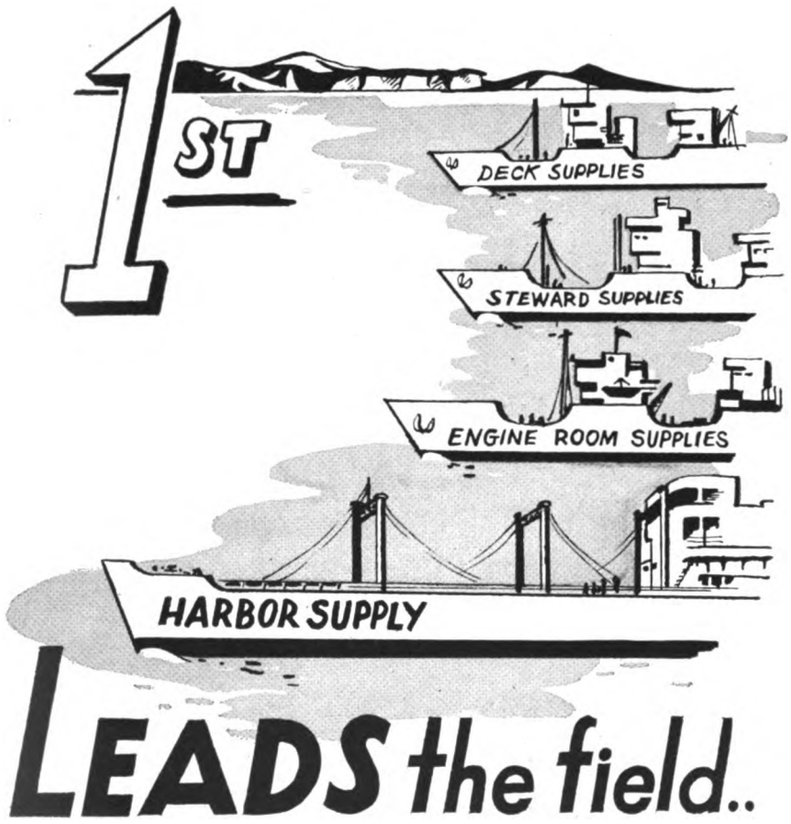
WORLD SHIPBUILDING

UNITED STATES FLAG MERCHANT TANK SHIPS AS OF MARCH 1, 1948
Seagoing Vessels 1,000 Gross Tons and Over by Design and Ownership

Type and Design	Total			OWNERSHIP					
				U.S.M.C. Owned			Privately Owned		
	Number	Gross Tons	Deadweight Tons	Number	Gross Tons	Deadweight Tons	Number	Gross Tons	Deadweight Tons
Total	580	5,114,757	8,188,900	178	1,408,900	2,202,300	402	3,705,857	5,986,600
Emergency Fleet Corporation	24	170,416	267,800	5	36,392	56,500	19	134,024	211,300
Merchant Marine Act of 1928	8	72,059	121,100	...	.....	.....	8	72,059	121,100
Foreign Construction[1]	7	64,199	104,200	2	14,374	23,100	5	49,825	81,100
United States Private Construction	144	1,168,394	1,902,800	9	55,802	91,000	135	1,112,592	1,811,800
Built prior to 1/1/39	76	543,322	898,100	8	48,501	78,200	68	494,821	819,900
Built subsequent to 1/1/39	68	625,072	1,004,700	1	7,301	12,800	67	617,771	991,900
T1-M-A1	3	3,355	4,700	2	2,200	3,200	1	1,155	1,500
T1-M-A2	15	16,932	22,500	14	15,798	21,000	1	1,134	1,500
T1-M-BT1	5	15,096	20,600	4	11,834	16,400	1	3,262	4,200
T1-M-BT2	12	38,849	50,400	10	32,540	42,000	2	6,309	8,400
T2	4	40,075	64,000	...	.....	.....	4	40,075	64,000
T2-SE-A1	269	2,773,482	4,479,000	85	882,653	1,421,100	184	1,890,829	3,057,900
T2-SE-A2	4	43,200	65,800	4	43,200	65,800	...	.....	.....
T2-SE-A3	1	10,800	16,400	1	10,800	16,400	...	.....	.....
T3-M-AZ1	1	11,401	17,600	...	.....	.....	1	11,401	17,600
T3-S-A1	17	169,693	278,600	...	.....	.....	17	169,693	278,600
T3-S-BF1	4	44,065	74,000	...	.....	.....	4	44,065	74,000
T3-S-BZ1	3	42,552	69,000	...	.....	.....	3	42,552	69,000
T3-S2-A1	1	11,323	18,200	...	.....	.....	1	11,323	18,200
Z-ET1-S-C3 (Converted Liberty)	57	411,568	604,600	42	303,307	445,800	15	108,261	158,800
Converted C1-A	1	7,298	7,600	...	.....	.....	1	7,298	7,600

[1]–Built prior to 1/1/39.
NOTE: Excluded from the above figures are 96 tankers of 979,000 gross and 1,556,000 deadweight owned (1) by the U. S. Maritime Commission and transferred foreign under lend-lease or ther agreements and still remaining under foreign registry by subsequent arrangement and (2) those tankers owned by the U. S. Army and Navy.
oource: United States Maritime Commission Research Division, April 7, 1948.
S—



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Oil Tankers Under Construction in the World as of December 31, 1947 (1,000 Gross Tons and Over)

Steam and motor oil tankers of 1,000 tons gross and upwards under construction in the world amounted to 84 vessels of 742,084 gross tons (11 steamers of 80,690 tons and 73 motor vessels of 661,394 tons):

Country of Build	Steam		Motor		Total	
	No.	Tons	No.	Tons	No.	Tons
Great Britain and Northern Ireland	4	34,390	46	413,555	50	447,945
British Dominions	3	9,000	...	.....	3	9,000
Belgium	...	.....	2	19,700	2	19,700
Denmark	...	.....	5	55,036	5	55,036
France	3	28,300	3	31,399	6	59,699
Italy	...	.....	4	13,000	4	13,000
Portugal	...	.....	1	8,200	1	8,200
Spain	...	.....	3	24,904	3	24,904
Sweden	...	.....	9	95,600	9	95,600
U. S. of America	1	9,000	...	.....	1	9,000
Total	11	80,690	73	661,394	84	742,084

Source: Lloyd's Register of Shipbuilding Returns.

Steel Steamers and Motorships Under Construction in the World as of December 31, 1947 (Vessels of 100 Gross Tons and Over)

Country	Steamers		Motorships		Total	
	No.	Gross Tons	No.	Gross Tons	No.	Gross Tons
Great Britain and Northern Ireland	186	980,507	263	1,181,339	449	2,161,846
Argentina	...	.....	...	.....	...	.....
Belgium	5	6,580	36	74,700	41	81,280
British Dominions, Colonies, etc.						
Australia	10	38,115	6	2,600		
Canada	23	92,570	43	55,300	85	199,005
Other British Dominions	3	10,420	...	.....		
China	1	2,600	...	.....	1	2,600
Denmark	1	2,175	29	132,510	30	134,685
Egypt	...	.....	1	500	1	500
Finland	6	2,782	...	.....	6	2,782
France	25	88,331	74	207,058	99	295,389
Italy	7	14,450	60	203,927	67	218,377
Netherlands	12	21,200	109	233,999	121	255,199
Norway	20	31,049	38	48,153	58	79,202
Poland	1	1,925	...	.....	1	1,925
Portugal	...	.....	10	16,203	10	16,203
Spain	15	25,969	35	82,462	50	108,431
Sweden	4	9,385	63	252,220	67	261,605
U. S. of America:						
Atlantic Coast	10	55,324	23	16,610		
Gulf Ports	8	43,264	1	400		
Pacific Coast	1	16,000	1	700	53	135,852
Great Lakes	...	.....	9	3,554		
Uruguay	...	.....	6	2,436	6	2,436
Yugoslavia	...	.....	3	9,300	3	9,300
Total	338	1,442,646	810	2,523,971[1]	1,148[1]	3,966,617

[1]–Does not include 28 wood or composite vessels of 5,361 tons gross reported by Lloyd's Register as under construction.
Source: Lloyd's Register of Shipbuilding Returns.

The above tables show the distribution of ship construction by countries of building: No figures are given for Germany, Japan, or the Soviet Union. The figures include only steam and motor vessels of one hundred gross tons and over; sailing vessels, non self-propelled craft and other small tonnage are excluded.

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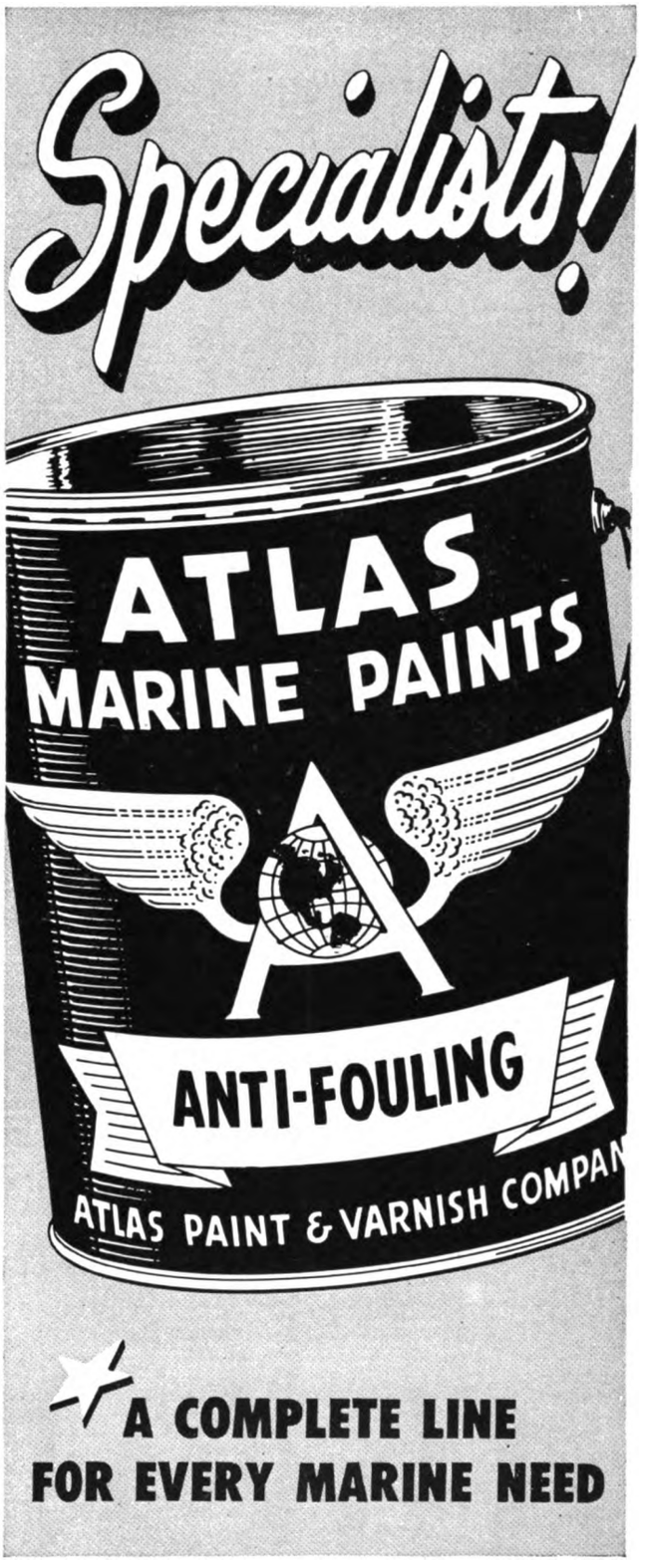

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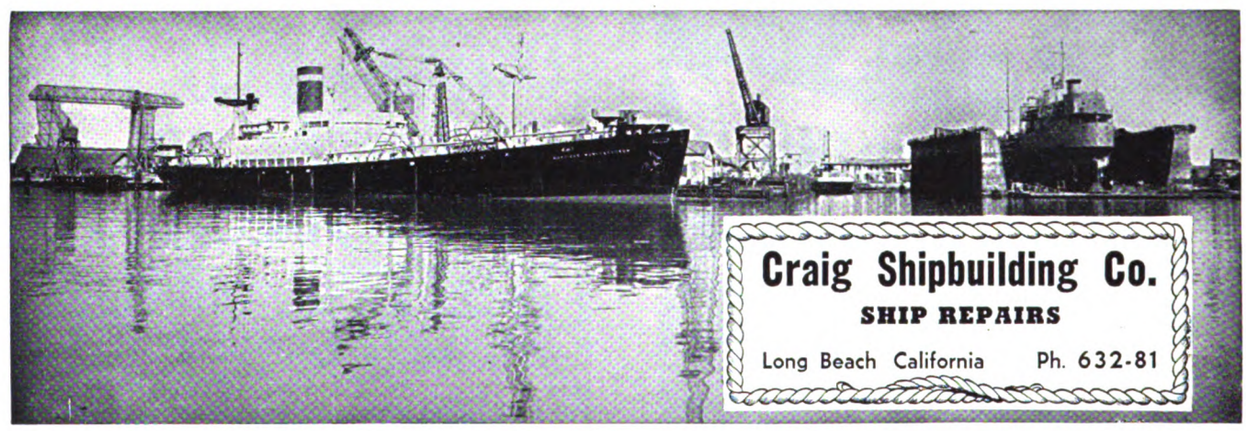

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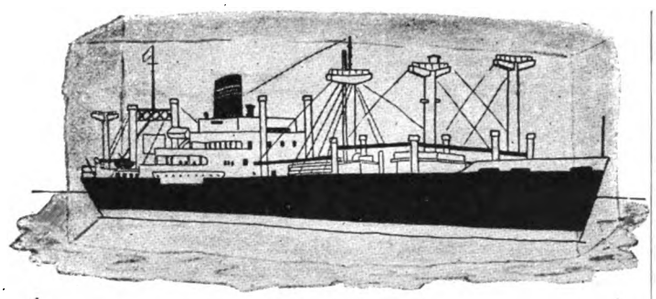

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Alaska Steamship Co. 128
Albina Engine & Machine Works 157
Alcoa Steamship Co. 41
Alexander & Baldwin, Ltd. 134
Allen Pacific Co., Robert G. 174
Aluminum Ladder Co. 157
American Brass Co. 17
American Mail Line 40
American President Lines 125
Ames Terminal 163
Arnessen Electric Co., ... 30
Asbestos Supply Companies 159
Atkinson Company, Milo 170
Atlas Paint & Varnish Co. 169

Babcock & Wilcox Co. 51
Baier & Associates, L. S. 175
Baker Dock Co. 174
Bethlehem Steel Co. 57
Bird-Archer Co. of Calif. 172
Bludworth Marine 163
Board of State Harbor Commissioners, San Francisco 37
Boland Machine & Manufacturing Co., Inc. 172
Bratsberg, Capt. A. J. H. 175

California Ship Repair Corp. 174
Catalina Island Steamship Line 134
Cavanaugh Machine Works 10
Central Maritime Contracting Co. 136
Chamberlin & Co., W. R. 130
Clark Equipment Co. (Industrial Truck Div'n.) 87
Coen Co. 144
Coffin, Jr., Co., J. S. 36
Colby Steel & Engineering Co. 30
Columbia Machine Works 174
Combustion Engineering Co. 5
Commercial Ship Repair 18
Consolidated Services, Inc. 169
Continental Asbestos & Refining Corp. 136
Cordes Bros. 174
Costello Supply Co., J. M. 22
Craig Shipbuilding Co. 170
Crane Packing Co. 138
Curtis Bay Towing Co. 12

Dahl-Beck Electric Co. 45
Dampney Co. of America, The 161
Dearborn Chemical Co. 167
De Boom Paint Co. 97
Dee Engineering Co. 134
De Laval Separator Co. 7
De Laval Steam Turbine Co. 4
Diesel Control Corp. 152
Dravis Engineering & Machine Works 172
Dravo Corp. 62
Drew & Co., Inc., E. F. 1
Duke's Packing Co. 56

Enterprise Engine & Foundry Co. 35
Everett Pacific Shipbuilding & Dry Dock Co. 31

Fitler Co., The E. H. 150
Forster Shipbuilding Co., Inc. 152
Foster Wheeler Corp. 43
French, Karl 134

Garlock Packing Co. 23
General Electric Co. ..... 14 & 15
General Engineering & Dry Dock Co. 171
General Ship Service Co. 140
General Steamship Corp., Ltd. 134
Gigy & Associates, M. J. 16
Gladding, McBean & Co. 175
Gow, Inc., Alexander 174
Grace Line 132
Green Fire Brick Co., A. P. 47
Griffiths & Sons, Inc., James 132
Griffiths & Sprague Stevedoring Co. 144
Groves Co., Frank 140
Guralnick, Morris 175

Hagan Corp. 59
Hanson, H. C. 175
Harbor Marine Electric Co. 173
Harbor Supply Co., Inc. 168
Harris, Manly 175
Hart & Burns, Inc. 142
Haviside Company 165
Hendry Co., C. J. 8
Hercules Equipment & Rubber Co. 20
Heuck Co., Ed 155
Hickman Engineering Co. 173
Hillcone Steamship Co. 130
Hiller, Paul W. 175
Horton Agency, Lou E. 175
Hough & Egbert Co. 174

International Marine Paint Agency 148
International Nickel Co. 25
International Ship Cleaners, Inc. 171
Isherwood & Co., Sir Joseph W. 175

Jeans, Capt. Harvey A. 175

Karl Instruments 96
Kearfott Engineering Co., Inc. 55
Kingsbury Machine Works, Inc. 142

Lake Union Dry Dock Co. 155
Leslie Co. 2
Liquidometer Corp. 165
Long Beach Marine Repair Co. 150
Long Beach, Port of 117
Los Angeles Board of Harbor Commissioners 123
Lubaid Co. 27
Luce & Co. 159
Lykes Bros. Steamship Co., Inc. 99

Marden & Hagist 142
Marine Electric Co. (Portland) 165
Marine Electric Co. (San Francisco) 167
Marine Electronics Engineers 175
Marine & Industrial Supplies & Service, Inc. 138
Marine & Industrial Supply, Inc. 157
Marine Service, Inc. 172
Marine Solvents Service Co. 24
Maritime Engineering 175
Marwedel, C. W. 26
May & Smith Co. 172
Moore & Co., Engineers, C. C. 51
Moore Dry Dock Co. 148
Moore-McCormack Lines, Inc. 128
Morrison & Bevilockway 173

National Malleable & Steel Castings Co. 9
Nickum & Sons, W. C. 175
Nordberg Manufacturing Co. ..... Front Cover & 3
Northwest Instrument Co. 175
Northwest Marine Iron Works 161
Nystrom, Capt. E. W. 175

Oakland, Port of 118
O'Donnell Copper Works 172
Olympic Steamship Co., Inc. 134
Oweson & Co., Inc. 169
Oxi Corp. 44

Pacific Coast Rubber Co. 152
Pacific Far East Line, Inc. 106
Pacific Marine Refrigeration Co. 169
Pacific Marine Supply Co. 42
Pacific Ship Repair, Inc. 173
Pacific Transport Lines 132
Perry, L. C. 175
Piezo Manufacturing Corp. 155
Pilot Marine Corp. 54
Pope & Talbot Lines 125
Portland Commission of Public Docks 120
Puget Sound Bridge & Dredging Co. 28
Puget Sound Freight Lines 134

Radiomarine Corp. of America ..... Inside Back Cover
Raytheon Manufacturing Co. 81
Refractory Coatings Co. 167
Refrigeration Components 171
Republic Electric Co. 172
Robbins, W. J. "Bill" 144
Rober Co., W. H. 167
Roebling's Sons Co., John A. 13
Ross Heater & Manufacturing Co. 103
Rothschild International Stevedoring Co. .. 174
Ryan Co., E. L. 146

Seaboard Machinery Corp. 29
Sea-Ro Packing Co., Inc. 146
Seaside Supply Stores, Inc. 167
Seattle Marine Surveyors 175
Seattle, Port of 114
Selby Battersby & Co. 159
Sharples Corp., The 11
Shaw Bros. & Associates 175
Shell Oil Co. 61
Shenango-Penn Mold Co. 60
Sherritt & Headman, Inc. 173
Short Co., Thomas A. 150
Sims Pump Valve Co. 167
Socony-Vacuum Oil Co., Inc. ..... Inside Front Cover
Sopac Ship Maintenance Co. 94
Sperry Gyroscope Co., Division of the Sperry Corp. 21
Standard Distributing Co. 124
Standard Marine Supply, Inc. 171
Standard Oil Co. of Calif. 19
Submarine Signal Co. ..... 52 & 53
Sumco Products, Inc. 58
Sweetin, J. L. 172
Swett & Co., George E. 161

Tacoma, Port of 124
Tanker Loaders Corp. 136
The Texas Co. ..... Outside Back Cover, 96A, B, C, D
Thompson Co., J. Paul 175
Thorpe & Sons, Inc., J. T. 173
Todd Shipyards Corp. 34
Toumey Electric & Engineering Co. 171
Tubbs Cordage Co. 46

United Fruit Co. 38
United States Lines 39

Viking Marine Co. 148

Washington Aluminum Co., Inc. 109
Washington Stove Works 163
Weeks-Howe-Emerson Co. 174
Western Asbestos Co. 170
Western Machinery Corp. 175
Western Ship Service Co. 50
Westinghouse Electric Corp. ..... 48 & 49
Whitman Co., The 122
Wickwire Spencer Steel Co. 33
Winter Co., Eugene V. 165
Woodlawn Flower Co. 167
Worthington Pump & Machinery Corp. 6

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The Master of ESSO CHATTANOOGA, *views the 12-inch scope of Radiomarine Radar.*

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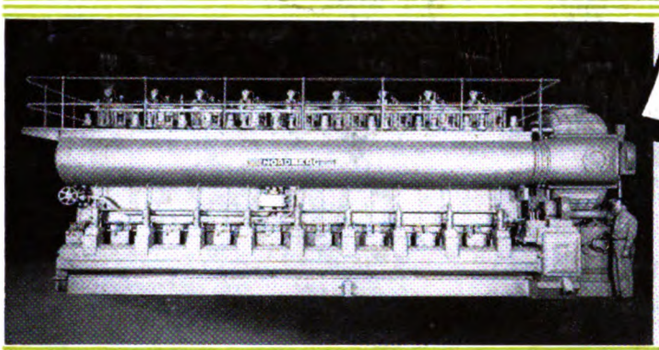

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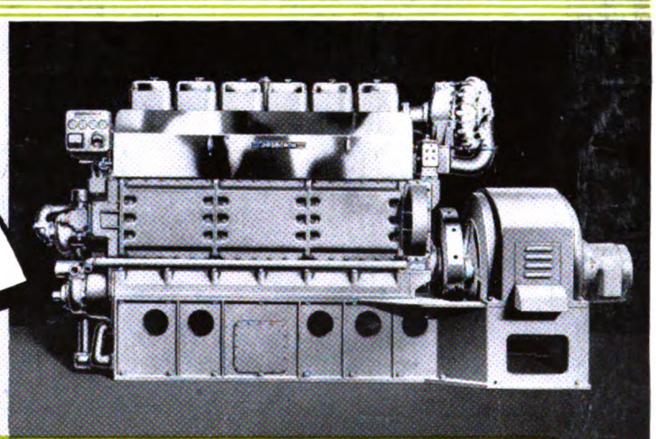

See Page 3

NORDBERG
DIESEL ENGINES

AUGUST 1948
Volume 43 • Number 9

EDITORIAL INDEX ON PAGE....23
ADVERTISERS' INDEX ON PAGE 68

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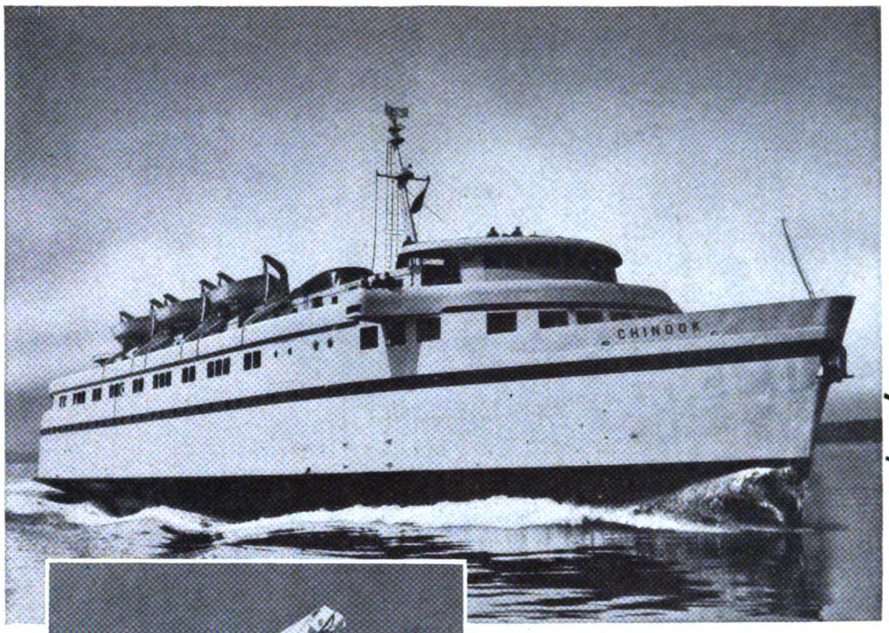

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of the twenty-three vessel fleet of the Puget Sound Navigation Company

The M. V. Chinook is hailed as the finest vessel ever put into Puget Sound Service. The Vessel is the culmination of years of planning with the purpose of accommodating the growing tourist travel between Seattle, the northern Olympic Peninsula and Vancouver Island.

The lavish appointments make the Chinook comparable to the finest hotel. From stem to stern the M. V. Chinook is the latest word in sea-going decor and equipment.

When the designers specified its life saving equipment they specified Welin-made life boats, gravity davits and winches, and a total of six 26′ lifeboats, each accommodating 50 persons, and one 12′ lifeboat to accommodate 6 persons.

The designers also used another one of Welin's exclusive features. One portable motor on each side of the vessel to hoist the lifeboats back into position after they have been launched. The motor is easily transported from one lifeboat station to another as needed. This saves weight and also the cost of having a separate motor for each lifeboat.

When efficient and modern lifeboat equipment is specified for use on the latest in sea-going vessels, Welin lifeboats, davits and winches are "on deck".

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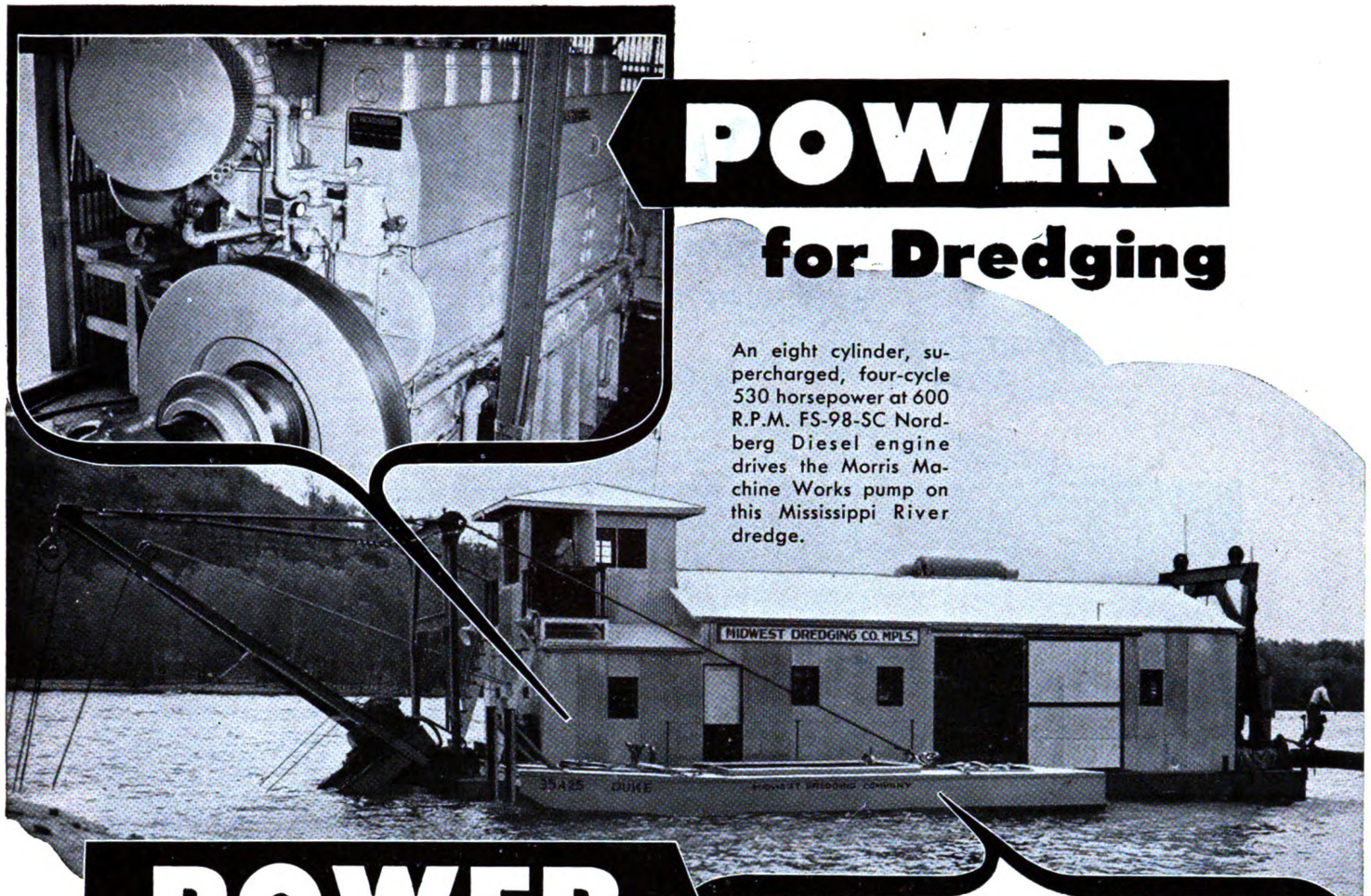
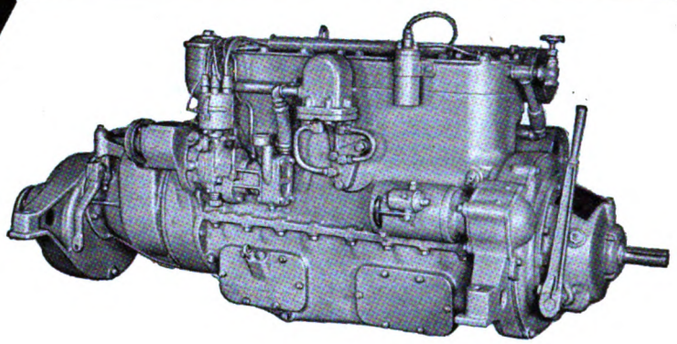


POWER for Dredging

An eight cylinder, supercharged, four-cycle 530 horsepower at 600 R.P.M. FS-98-SC Nordberg Diesel engine drives the Morris Machine Works pump on this Mississippi River dredge.

POWER for Propulsion



Dredge tender DUKE is propelled by a six cylinder, Model 340 Nordberg marine gasoline engine with 4.12 to 1 reduction gear and flywheel mounted clutch power take-off.

WHETHER it is a propelling engine, an auxiliary generating set or a power unit for driving a dredge pump as shown in this application, the extensive line of Nordberg engines permits the selection of the proper equipment for each specialized power requirement. Diesel engines are available in two and four-cycle types with a size range from 175 to 8500 horsepower. Marine gasoline engines in three six cylinder models are available in sizes from 52 to 133 horsepower. When in need of marine power, investigate the merits of Nordberg power.

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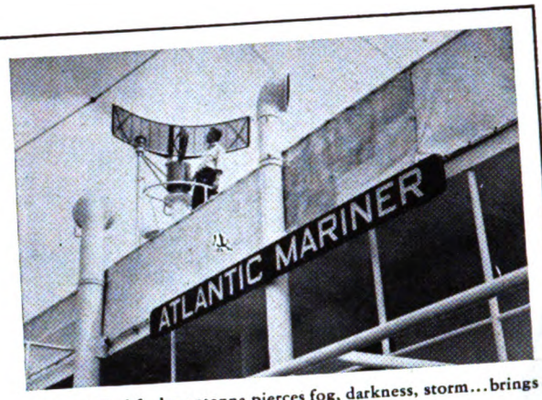
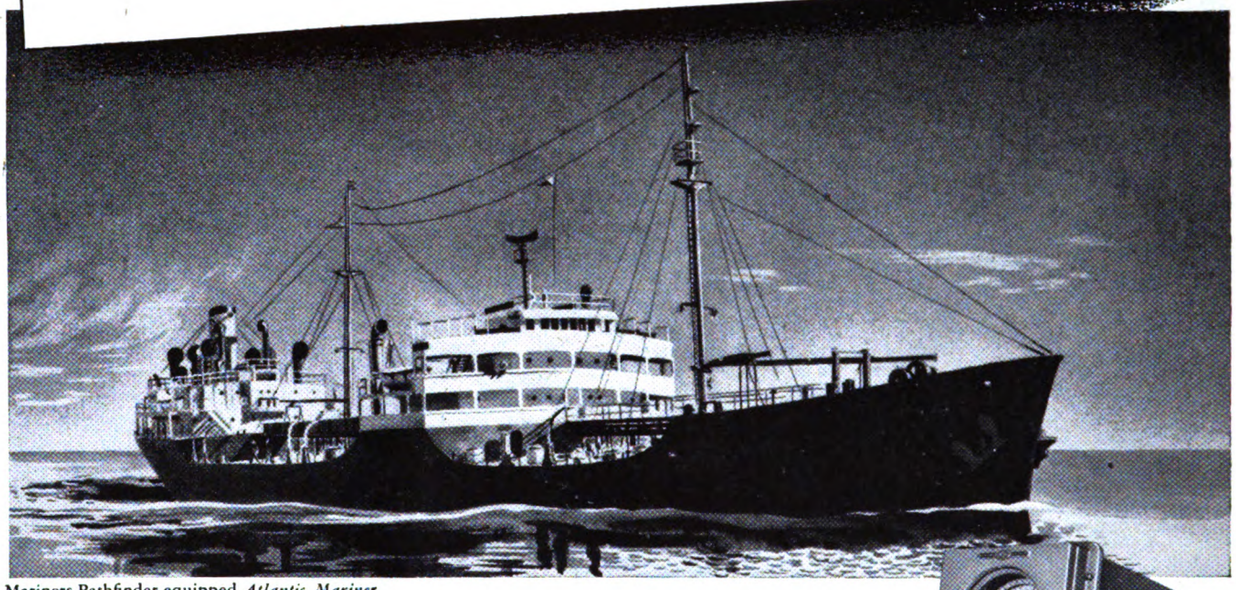


Mariners Pathfinder antenna pierces fog, darkness, storm...brings daylight navigation to the pilot-house.



Mariners Pathfinder-equipped *Atlantic Mariner*

Atlantic Refining to Speed Tanker Schedules with 21 MARINERS PATHFINDER* 10cm Radars

Beginning with its maiden run from Corpus Christi, Texas, to Fort Mifflin, Philadelphia, the *Atlantic Mariner* has been delivering crude with clock-like regularity.

Starting with this test installation on the *Atlantic Mariner* which proved the superiority of Mariners Pathfinder 10 cm Radar, The Atlantic Refining Company ordered 20 additional units to provide safe navigation and speed schedules of its other ocean-going tankers.

The new Mariners Pathfinder installations will be equipped with 12-foot antenna reflectors. These large reflectors give the high definition usually obtained with 3 cm units while retaining the all-weather dependability of the 10 cm systems.

Ship operators of all types of vessels can insure safe navigation . . . keep ships moving through fog, rain, sleet and darkness...enter or leave port safely by installing Mariners Pathfinder radar — 10 cm for ocean-going vessels, 3 cm for inland waters.

*"Mariners Pathfinder" is the trademark of the Raytheon Manufacturing Company denoting its commercial search radar.

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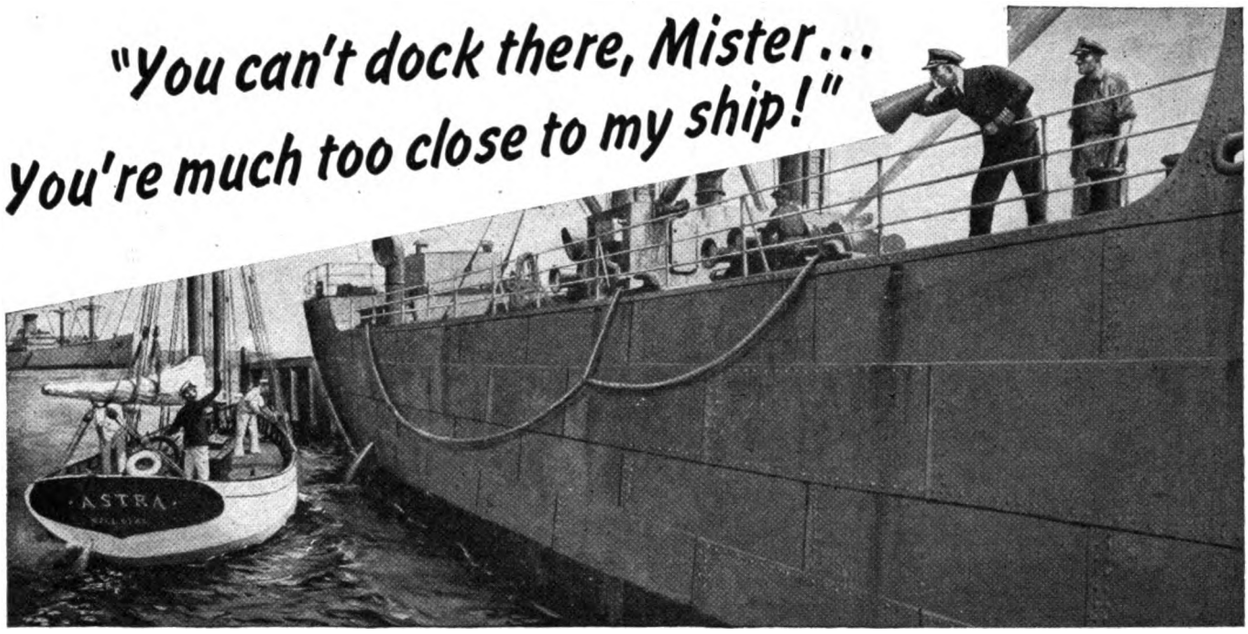
"You can't dock there, Mister... you're much too close to my ship!"



THE CAPTAIN is really not so unreasonable as he seems.

On land he's probably very friendly indeed. But, right now he is suffering from a bad case of *galvanic corrosion phobia.* It *could* happen to you . . . and maybe *has.* For on land or sea a good deal of obscurity exists about galvanic corrosion. Like anything not fully understood, it may lead to strange conduct.

The Captain's fears arise from the fact that the smaller vessel is sheathed with a metal lower in the galvanic series than his own steel hull-plates. For generations, some sailors have been wont to blame a leaky hull on galvanic effects from an adjacent ship. According to the distinguished authority on metal corrosion at Cambridge University, Prof. U. R. Evans, *"Copper ships have long enjoyed an evil reputation as neighbors for steel ships in port."**

Waiving the moral question, whether any ship has a right to "enjoy" an evil reputation, in certain exceptional cases this reputation may have been deserved. For instance, some authorities consider galvanic effects between a rapidly-moving propeller and steel hull-plates a serious cause of ship corrosion, especially at points where there is a break in the scale or paint. With the two different ships shown above, the galvanic effect would be serious only at breaks in the coating on the steel ship, and then only if there were actual metallic contact between the two ships for a prolonged period.

*"Metal Corrosion, Passivity and Protection," by U. R. Evans, Longmans Green & Co., New York, page 523, (1946).

NOT ALWAYS GUILTY

Galvanic or bi-metallic corrosion, as it is sometimes called, has acquired an unduly bad name in many quarters. Obscure difficulties are often unreasonably attributed to it. In some quarters, galvanic effects are conveniently held responsible for all failures not readily explained on other grounds.

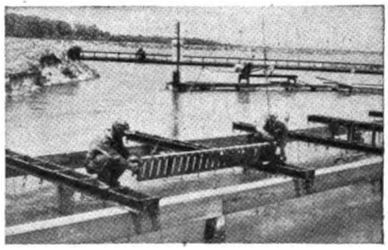
It is a fact that serious effects can often be traced to an unusually poor choice of dissimilar metals from points far apart in the galvanic series. But, it should not be forgotten that, in many cases and for many years, judiciously selected bi-metallic systems have given excellent service. For years ferrous valves have been trimmed with non-ferrous alloys, and non-ferrous fittings have been used with iron and steel pumps, with excellent results.

When an occasional failure arises it is not uncommon to search for galvanic effects, and to overlook the fact that the less noble metal would have succumbed to the corrosive fluid being handled even if it were not coupled to its nobler partner.

TO FIND THE REAL OFFENDER

For more than 25 years the Development and Research Division of The International Nickel Company has studied galvanic corrosion phenomena, not only in sea water but in many other media. The data that have been collected are readily available in our files.

If we have a specific answer to your problem, we will be glad to pass it along upon request . . . without obligation.



Underwater corrosion testing by Inco corrosion engineers at Kure Beach, North Carolina. A rack of metal specimens is shown being lowered into an ocean test basin.

Send for your copy of the 10-page discussion "Aspects of Galvanic Corrosion." Address The Marine Department, The International Nickel Company

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First Distress Signals to Meet New Coast Guard Regulations

EFFECTIVE JANUARY 1, 1949

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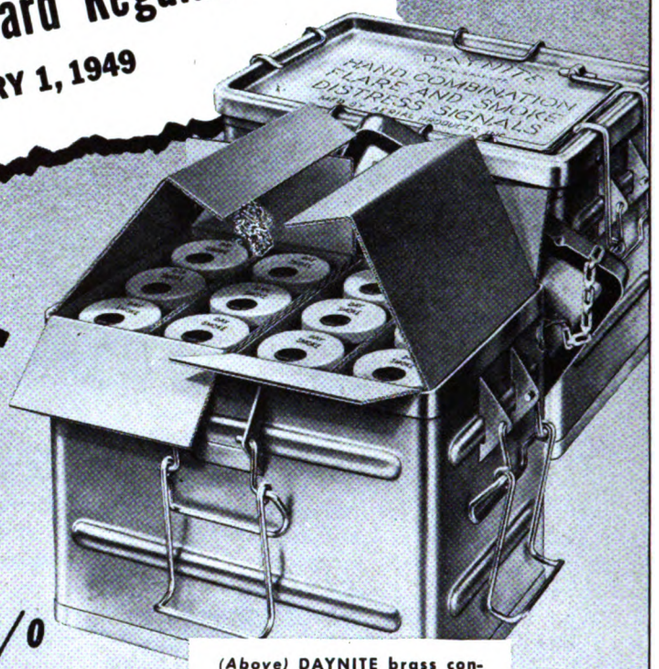

(Above) DAYNITE brass container (open and closed) showing snap-action locking hooks for water-tight seal on rubber compression gasket. Container overall only 9⅜" x 6¾" x 6½"—less than ¼ cubic foot. DAYNITE container with its combination of 12 flares and 12 smoke signals takes less than 1/5 the cubic volume of space previously needed to stow 12 paper-wrapped fireworks-type flares and 4 bulky smoke pots.

Individual Signals only 5⅛" long, weigh less than 7 oz. Yet each provides both *day* and *night* protection.

After January 1, 1949 only distress signals complying with U. S. Coast Guard's revised regulations may be carried by Maritime vessels. Most modern and dependable, Daynite Distress Signals were first to win U. S. C. G. Approval, (No. 160.023/1/0) Federal Register Nov. 1, 1947.

Previously, Daynite Distress Signals were approved by Civil Aeronautics Administration, Air Transport Association, and have long been standard for the U. S. Armed Forces, 1,500,000 having been shipped to the Services.

Only DAYNITE DISTRESS SIGNALS provide outstanding protection day and night . . . a vivid orange smoke signal (visible 13 miles) and a brilliant red flare (visible 33 miles) in opposite ends of same water-tight, hand-held steel container. Simple pull-ring igniter. Once ignited neither wind nor waves can extinguish flare or smoke signal.

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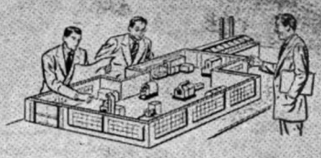

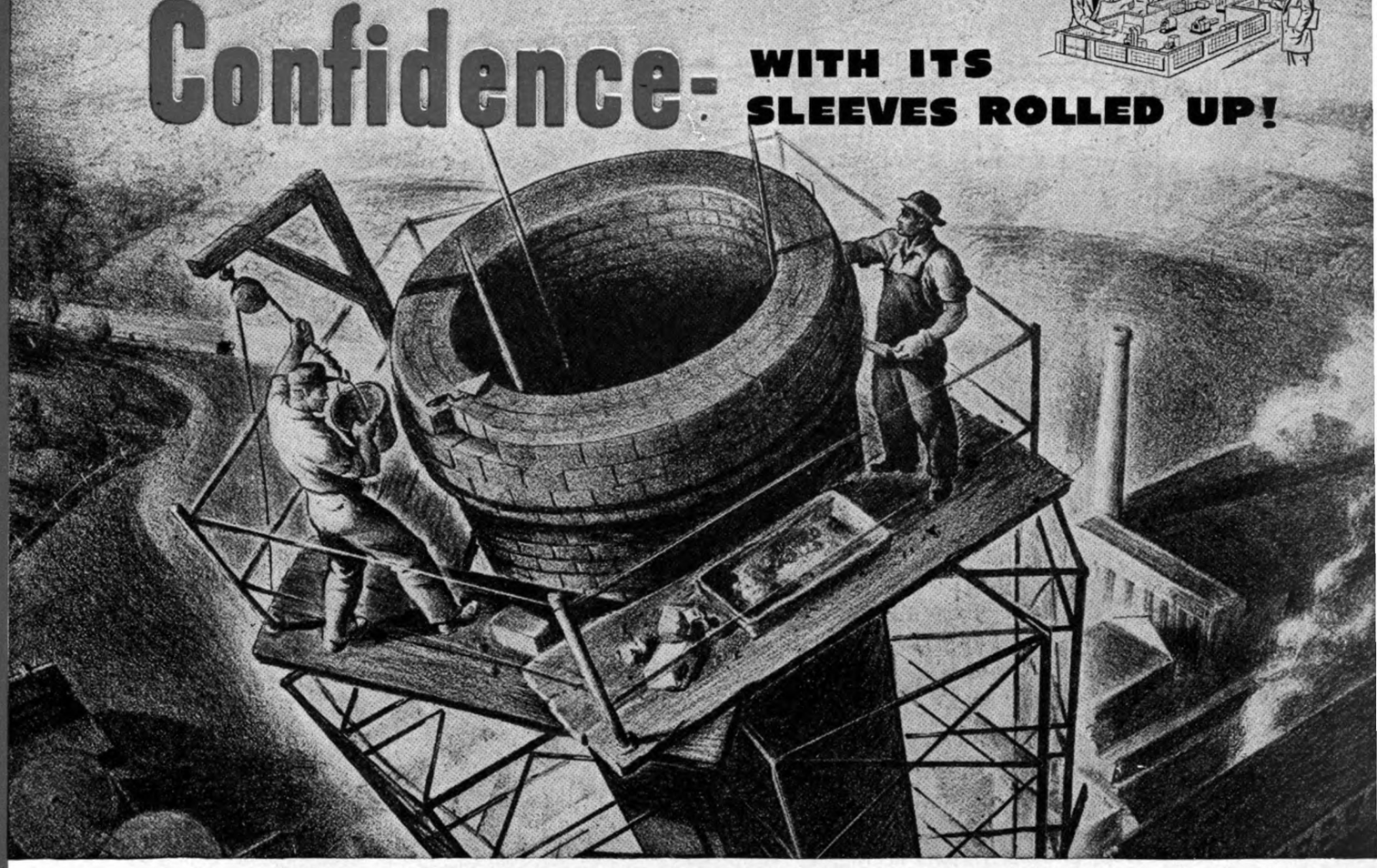

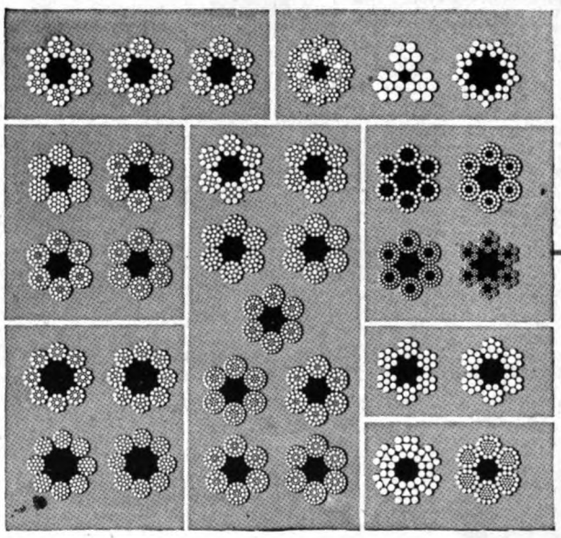

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...since the white ships came...

Starting nearly half a century ago to sail to Caribbean ports for tropical fruits, the ships of the Great White Fleet began to serve the mutually beneficial trade between Middle and North America.

To coordinate cargo movements efficiently the United Fruit Company pioneered the first ship-to-shore radio in the Caribbean—known today as Tropical Radio Telegraph Company.

Passenger traffic as well as cargoes steadily increased—citizens of Middle and North America both, learning to know each other better.

Agricultural experiments with such new crops as abaca (manila hemp), the insecticide, rotenone, and African palm oil are progressing. Today these new crops, as well as the traditional nutritious foods of Middle America — bananas, cocoa, coffee, sugar — form part of the cargoes continually moving north, while—southbound—the Great White Fleet carries the products of northern farms and factories.

Harbinger of all this was the first white ship that sailed so long ago . . . and of much more, too . . . of the growing understanding and friendship between the Americas. The day by day contacts of thousands of individuals form the foundation of the practical Good Neighbor Policy.

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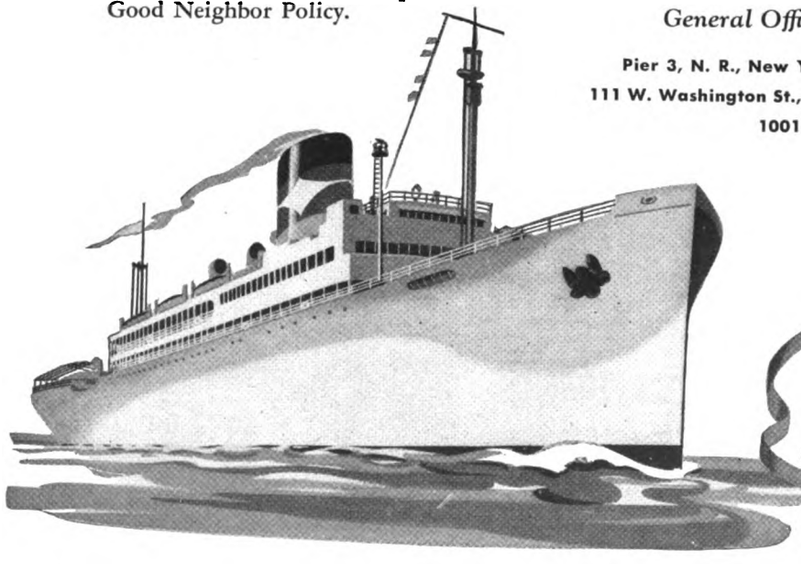

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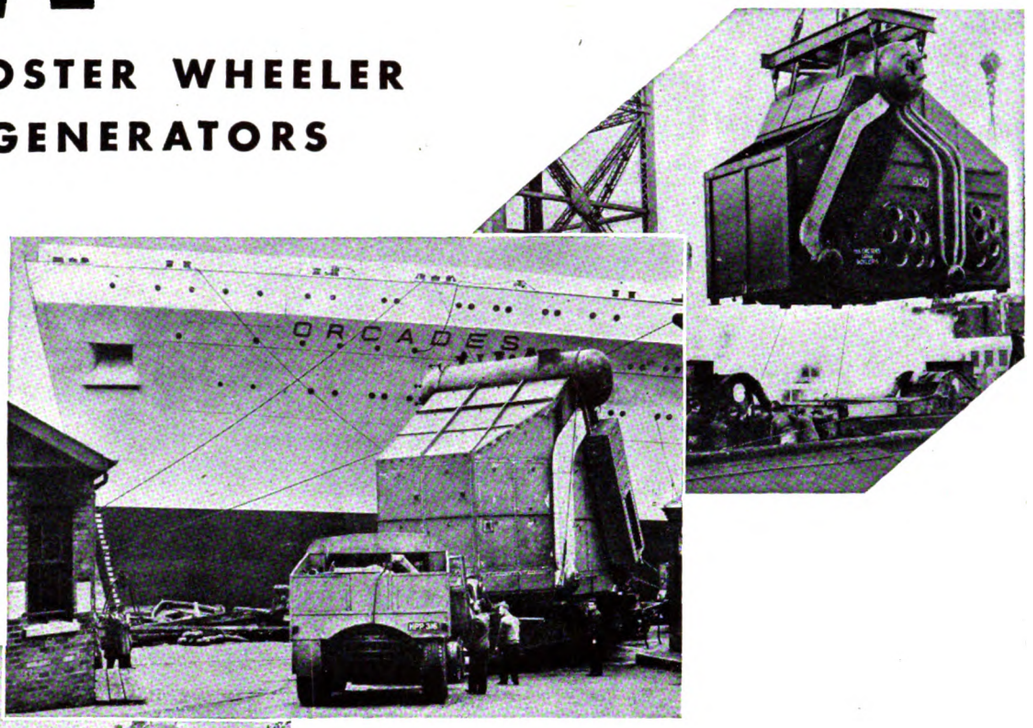
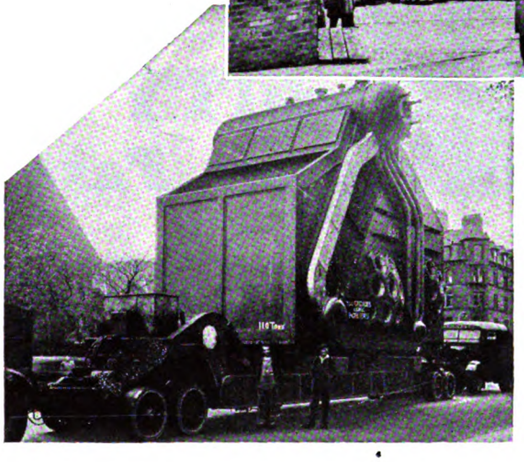
Another Ship Getting Ready for a Long and Profitable Career —

WITH FOSTER WHEELER STEAM GENERATORS





A total of 42,000 horsepower is provided for this ship by two large and two small FW steam generators. The twin furnace single-pass boilers with the superheater in the main tube bank provide a safe and practical superheat control. These special features make for long and efficient operation and low maintenance costs—well known characteristics of FW marine steam generating equipment. The boilers are also equipped with economizers to obtain the required high efficiency.

FOSTER WHEELER CORPORATION
165 Broadway, New York 6, New York

FOSTER WHEELER EQUIPPED SHIPS ENVELOP THE EARTH—

FOSTER WHEELER

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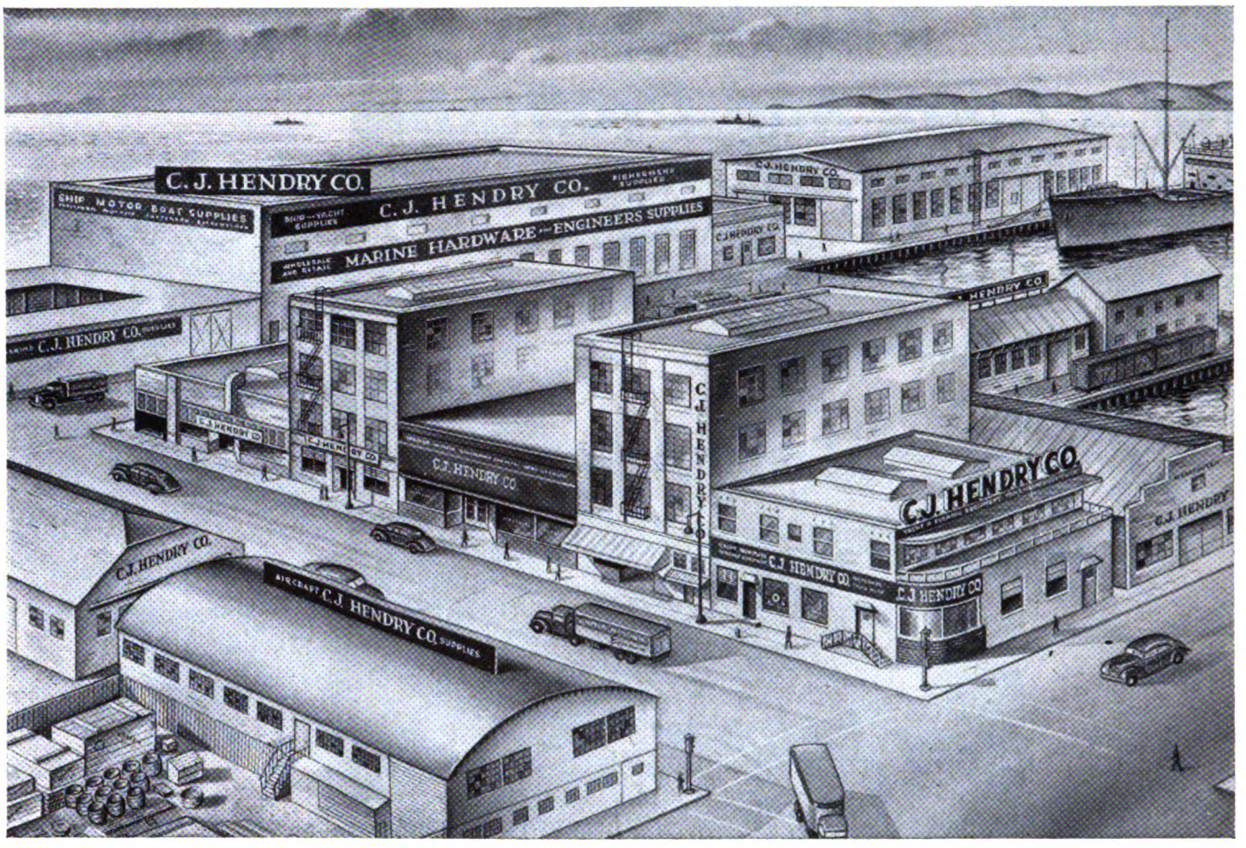
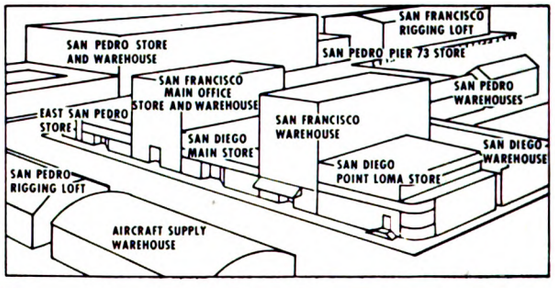


This is a composite picture of actual C. J. Hendry buildings, showing how they would look if grouped together.

IT TAKES A SMALL CITY
to fill marine orders *Fast!*

So we can say "We have it in stock," no matter what you require, C. J. Hendry maintains a small city of warehouses, stores, and lofts. The policy of being ready to deliver practically anything *from stock* has built the C. J. Hendry Company into the world's largest ship chandlers. Through associations built up during the past 82 years, this company is able to offer every benefit you might obtain direct from the factory, plus immediate service—plus the convenience of placing one order with one company for all your supplies.



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San Pedro:
111-121 S. Front St.
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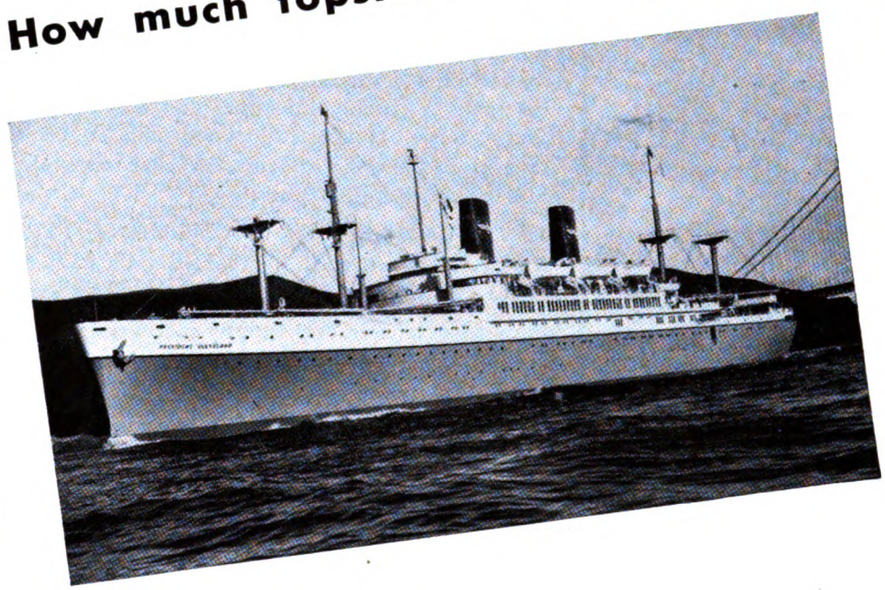
PROBLEM IN MARINE ARITHMETIC

Figure structures and equipment above boat deck in ALCOA ALUMINUM—

houses, bridges and stacks—lifeboats, davits and winches—

How much topside weight saved?



ANS: Over 100 TONS on the PRESIDENT CLEVELAND

That weight saving adds up to a 3-way advantage:

IMPROVED STABILITY—Because excess weight topside "goes overboard", G is lowered and GM increased for easier rolling and comfort. (Lifeboat equipment on the President Cleveland is Alcoa Aluminum, weighs only two-thirds as much as in other materials.)

MORE DEAD-WEIGHT CAPACITY—By reducing topside weight and permanent ballast . . . for greater earnings.

CORROSION RESISTANCE that means far less maintenance. Paint clings tighter to aluminum, needs less frequent renewing.

Alcoa Aluminum's three-way advantages are this easy to get: Choose the right alloy, in its most economical form; fabricate it the best, cheapest way; select the right finishing method. At each step, Alcoa's 60 years' experience with light metals can help you. ALUMINUM COMPANY OF AMERICA, 1834 Gulf Building, Pittsburgh 19, Pennsylvania. Sales offices in principal cities.

ALCOA® FIRST IN **ALUMINUM**

ALCOA ALUMINUM 1888 1948 60 YEARS OF SERVICE

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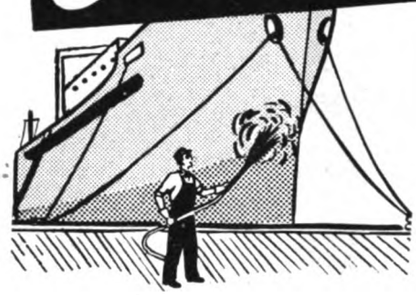

SPRAY IT ON-
FLUSH IT OFF-

TOPSIDES • BULWARKS • DECKS
DECK HOUSES • TANK TOPS AND BILGES

Also **SPILLS and SLICKS IN WATERS SURROUNDING VESSELS & PIERS**

Removes Grime and Grease
Cleans Paintwork CLEAN

ELIMINATE THE TIME AND LABOR COST OF HAND CLEANING, SCRAPING AND SCRUBBING

Fast, economical, efficient OILKLEEN may be applied quickly by spray or brush. Gets into out of the way places inaccessible or difficult for hand cleaning. Salt or fresh water flush-off quickly emulsifies and washes away all oil, grime, dirt, grease, leaving all wood and metal surfaces clean. Overnight "setting" facilitates rust-removal. Excellent for hull cleaning before painting.

INVALUABLE FOR REMOVING FIRE HAZARDS ABOARD, AND IN WATERS SURROUNDING SHIPS AND PIERS.

Now in extensive and rapidly-increasing use by leading vessel operators and oil transportation companies.

Write the Sumco Service Office nearest you (see listing below) for prices, demonstration and easy-use data; also for the comprehensive Sumco Handbook covering a wide range of cleaning procedures for hulls and steam-power equipment.

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Sumco **PRODUCTS INC.**

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Manufacturers of **FUELKLEEN • TUBEKLEEN • HEATERKLEEN • AQUAKLEEN • OILKLEEN • SUMCO SUDS**

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REPRESENTATIVES: Power Engineering and Supply Co., 90 Dearborn St., Seattle 4, Washington; Arthur R. Pegg, 508 N. Beacon St., San Pedro, California; Harbor Supply Company, 821 Folsom Street, San Francisco 7, Cal.; Boiler & Engineering Service & Supply Co., 2211 N.W. Front Ave., Portland 9, Ore.; Galveston Ship Supply Co., 2102 Strand, Galveston, Texas; Galveston Ship Supply Co., 1521 Wayside, Houston, Texas; Gulf Coast Marine Supply Co., Northeast Corner, Royal and Monroe Streets, Mobile, Ala.; Interstate Sales and Supply Co., 429 Calliope St., New Orleans, La.; T. Reddy Lanigan Co., 342 S. W. North River Drive, Miami, Florida; Hal F. Sterne Company, 77 Sans Souci St., Charleston, South Carolina.

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Eyewitnesses Log Experiences... with RADIOMARINE's 3.2cm 4-PURPOSE RADAR

Have been able to pick up targets in all weather conditions.

Along the Jersey Coast about 50 miles offshore had no difficulty in picking up the shoreline. Brooklyn and Coney Island were picked up at a range of 47 miles.

Picked up Mantanilla Light Whistle off the Little Bahama Bank at 26 miles, which sounds unbelievable considering the size of the target.

Picked up a contact at 8 miles and after closing on the object it was found to be a buoy which had broken from its mooring.

All the various pilots who had been aboard stated that this radar presents one of the best pictures they had ever seen.

It is already proved that the ship has gained several days and nights with the aid of radar.

While watching the radar scope, the First Mate saw two other ships on a collision course with one another, contacted the two vessels by radiotelephone and directed them to change their course, thereby avoiding a possible accident.

Rather than have the CR-101 removed from my vessel, I would be willing to pay $200 per month out of my salary to keep the equipment aboard.

Made landfalls by radar in the Baltic Sea and from port to port in Finland when not visible to the naked eye

By means of radar we kept the ship on a true course, thereby saving time and oil.

Passed inside between the Shumagin Islands and the mainland, obtained excellent results with radar through this tricky passage.

Going through the English Channel — low visibility — radar used to a large extent to pick up buoys and lights that were not visible more than one mile at the most.

YOU GET ALL 4 NAVIGATIONAL AIDS WITH RADIOMARINE 3.2cm RADAR

1. Pilotage 2. Position Finding 3. Anti-Collision 4. Storm Detection

These are just a few of hundreds of reports on the excellent performance of Radiomarine's 3.2cm Radar. They tell of a job well done in helping to maintain faster, safer schedules in all weather conditions at sea, in harbor, in inland waters. Send for complete report, "Eyewitness Accounts of RCA Radar Performance." Write: Radiomarine Corporation of America, 16 First Street, San Francisco, California. Tel: Garfield 0673.

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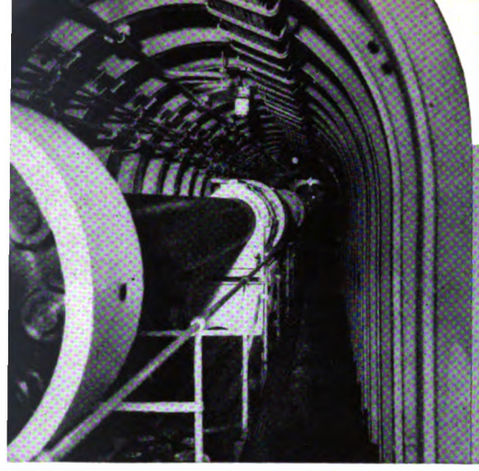

SHAFT ALLEY Chatter

J. Lewis Luckenbach Gets Public Service Award

The Navy Department's Distinguished Public Service Award was recently presented to J. Lewis Luckenbach, president of the American Bureau of Shipping and of the Board of Trustees of Webb Institute of Naval Architecture.

He received the award for his "meritorious service during World War II when the American Bureau of Shipping under the direction of president J. Lewis Luckenbach, conducted the inspection survey of practically every merchant ship constructed in this country including those turned over to the Navy Department for service in transporting urgently needed supplies and manpower to the fighting fronts in all corners of the world. This exacting task proved an extremely valuable function. In addition, Mr. Luckenbach controlled the use of scarce materials that went into the construction of these ships, the type of vessels constructed and brought to a high degree of perfection the workmanship used in the shipyards throughout the country. As a member of the Board of Trustees at Webb Institute of Naval Architecture, he aided greatly in furnishing the Navy with officer personnel experienced in this field."

RECENTLY ELECTED . . . JOHN S. BULL was made Secretary of Moran Towing & Transportation Company. He had been handling most of their post war business with European ship owners.

Celebrate Loading of Millionth Coffee Bag

The Moore-McCormack Lines' cargo-passenger liner MORMACGULF was responsible for the interest aroused in coffee circles in both Brazil and the United States when the millionth bag of the 1947 and 1948 Parana coffee crop was loaded aboard her at the port of Paranagua, Brazil, recently.

This was of great economic importance in the Brazilian State and the occasion was marked by a ceremony attended by several Brazilian notables. The bag did not sail aboard the ship, however, but was put ashore to be sold at an auction. It brought the fabulous sum of $1000 which was given toward repairs of the local Church.

⚓ ⚓ ⚓

Bethlehem Yard Launches 38th Steel Harbor Craft

Bethlehem Steel Company's Staten Island Yard recently launched The CAPE MARION and CAPE ASTORIA, the 37th and 38th steel harbor craft to be built since resumption of post-war activities.

The all-welded, hopper-type, steel coal barges with a capacity of 2,050 long tons each were built for the M. & J. Tracy Company, who have had 10 other craft constructed for them by Bethlehem in the past 18 months.

Ten additional barges of the same type are expected to bring deliveries into 1949 and at the same time enable Bethlehem to maintain a minimum of skilled shipbuilders who otherwise might drift to outside trades.

⚓ ⚓ ⚓

Capt. Gillespie Becomes Matson's Marine Manager

Captain Harold R. Gillespie of Matson Navigation Company was recently transferred from the position of superintendent at Wilmington to acting marine manager with headquarters in San Francisco. Captain Gillespie takes over the duties of the late Commodore C. A. Berndtson.

He joined Matson in 1920 and became a master in 1926, his first command being the SS MAKIKI. During the years Captain Gillespie served as master of most of Matson's passenger vessels and numerous freighters. He came ashore in 1944 as acting port captain in San Francisco.

"Lykes Fleet Flashes" Wins Honorable Mention Award

An Honorable Mention Award in the 1948 International Industrial Publication Contest, sponsored by the International Council of Industrial Editors was given to "Lykes Fleet Flashes," published by Lykes Bros. Steamship Co., Inc., of New Orleans.

Larry Guerin, editor, manager of Public Relations and advertising for Lykes, was presented with the Certificate of Award during the Annual Meeting of the ICIE in Milwaukee, Wis., recently. The magazine has a circulation of 10,000 copies monthly in 35 countries of the world.

⚓ ⚓ ⚓

C. M. Rohda Named Seattle Shipyard Vice President

Puget Sound Bridge and Dredging Company has announced the appointment of Charles M. Rohda as vice-president in charge of the Shipyard Division, with duties as general manager in charge of ship repairs, ship construction, shipbreaking, steel fabrication and machinery overhaul to continue. Prior to joining the Puget Sound Company in 1942 Rohda was with the Bethlehem Steel Company at Baltimore.

L. S. SPARRELL . . . was elected Vice President of the Propeller Club of the Port of New York at a recent annual meeting. He is manager of ship repair sales for the Shipbuilding Division, Bethlehem Steel Co.

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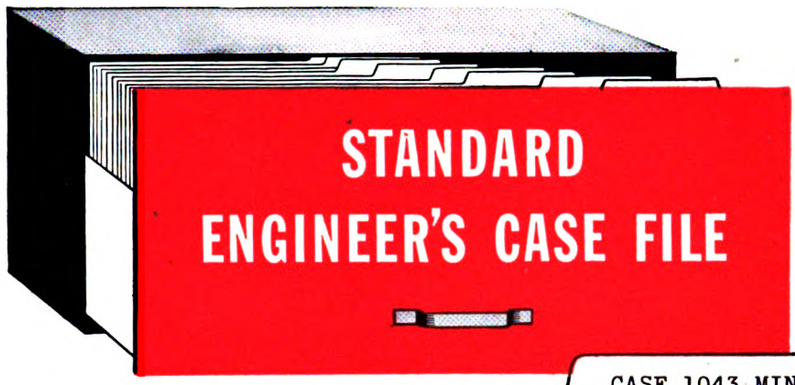
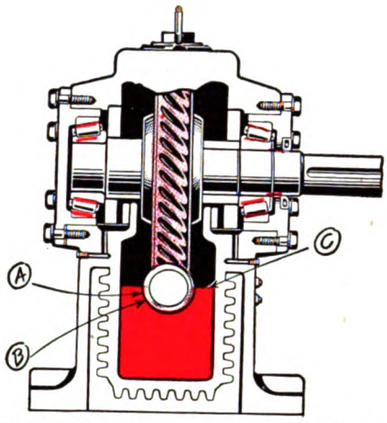


CASE 1043—MINIMIZING LEAKAGE IN LARGE ENCLOSED GEAR SETS.



AIR-COOLED WORM GEAR SPEED REDUCER

In heavy-duty industrial enclosed reduction gears the relatively high viscosity characteristics of Calol Gear Compound cut consumption. Efficient in both conventional and worm types and where such gears carry extra loads or are worn. Comes in eight grades: 60, 100, 120, 135, 150, 190, 225 and 410.

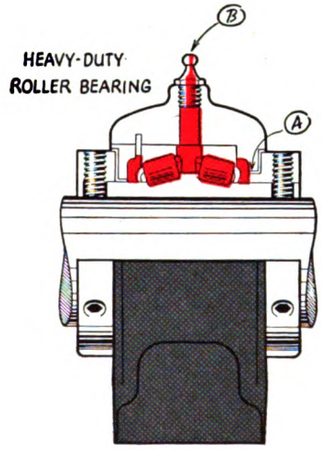
A. Oiliness and extreme pressure additives cushion shocks, prevent vibration, welding and extra wear.

B. Non-corrosive - will not harm bearing or gear metals.

C. Contains effective foam inhibitor - breaks bubbles that form and stops building up of pressure in case.

Calol Gear Compound resists high temperatures and retains good body in all operating conditions. Its numerous viscosity grades make it adaptable to a wide range of applications and conditions.

CASE 1065—SECURING POSITIVE BEARING LUBRICATION IN HIGH RADIATED TEMPERATURES.



Calol S. A. Grease stopped leakage and drippage trouble in a large roller bearing even when bearing temperature, due to radiated heat, reached 250°F. and over. Originally developed for heavy-duty anti-friction bearings, but adaptable to many industrial grease-lubrication services where high ambient temperatures exist. Comes in three grades: No. 00, No. 0 and No. 1.

Has sodium-aluminum soap base - feeds evenly through bearings ... oil stock selected for high heat-resistant qualities.

A. Minimizes seepage through housings and seals.

B. Resists cold temperatures - pumpability remains good in all weather.

Calol S.A. Grease has proved excellent for low-, medium-, and high-speed anti-friction bearings. It is packed in 35-, 108- and 420-pound containers.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20, California.

RPM CALOL

FOR EVERY NEED A **STANDARD OF CALIFORNIA** JOB-PROVED PRODUCT

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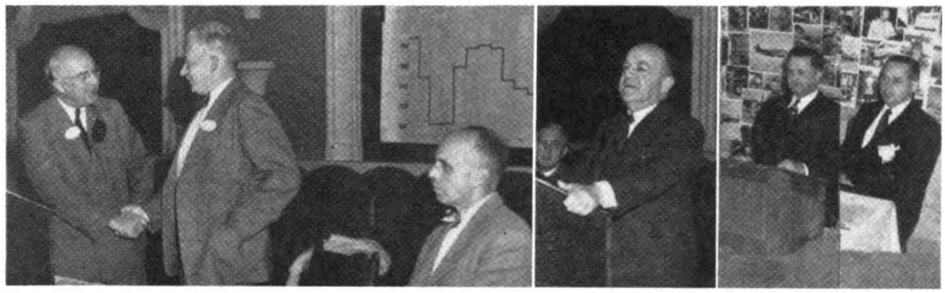
SHAFT ALLEY (continued) Chatter



MARINE FLAVOR WAS GIVEN THE TENTH ANNUAL WESTERN Safety Conference at Hollywood in June by participation of members of the Los Angeles-Long Beach Propeller Club and other marine men. Left to right: ARTHUR ELDRIDGE, General Manager of the Port of Los Angeles, welcoming HAROLD BLACK, Admiralty Attorney as his successor as president of the Propeller Club Port; Rear Admiral FRANK D. HIGBEE, USCG (ret) warden of the Port of Los Angeles; FRANK P. FOISE, San Francisco, President of the Waterfront Employers Association of the Pacific Coast talking on "Safety of Maritime Operations"; WILLIAM HARRINGTON, Manager of the Bethlehem shipyard at San Pedro talking on "Safety in Ship Repairs"; ALVIN E. ALLYN, Marine Chemist who talked on "A Practicable Technical Approach to Marine Safety."

Oliver J. Olson Open New Offices in Tacoma

Oliver J. Olson & Company, San Francisco, operators of a fleet of six vessels in the Pacific coastwise trade, announces the opening of an office in the W. R. Rust Building, Tacoma, with Martin E. Miller as manager. Mr. Miller was transferred from Wilmington, Calif., where he was in charge of the firm's southern California operations. Succeeding him there is Allen Moffet from the San Francisco headquarters.

The Olson company recently purchased the ss ODUNA and renamed her the MARY OLSON. This steel vessel, built at the Hanlon yard in Oakland in 1920, was operated by the Russians during the war and, later, by Alaska Steamship Company. The other ships in the Olson fleet are the ss BARBARA OLSON, GEORGE OLSON, HOWARD OLSON, KAREN OLSON, and OLIVER OLSON.

New QUEEN OF BERMUDA Due in NY in November

An army of experts at Newcastle-on-Tyne, England, is at work making the *Queen of Bermuda* ready for her first post war New York-Bermuda run. The luxurious liner will be a new "Queen," 27,770 tons with a speed of 21 knots and accommodations for 731 first-class passengers.

In converting the ship from a troop transport to luxury passenger liner, all the facilities that made her a popular favorite of travelers before the war will remain, but in addition she will have some of the latest improvements in ship design and equipment.

All fixed type upper berths have been replaced by a new type of disappearing pullman bed; ship-to-shore radio telephone system as well as new public address systems and the addition of 16 single cabins on the sun deck are some of the changes.

E. E. (Jack) SHIELDS, newly-elected President of the Portland Shipping Club.

Portland Shipping Club Elects Officers

E. E. (Jack) Shields, assistant manager of Sudden and Christenson, has been elected president of the Portland Shipping Club. He succeeds Fred Meyer, manager of Knappton Towboat Company. Shields is a Portland waterfront veteran.

Others elected are C. Roy Albers, vice-president; R. Guy Jubitz, secretary; and George Kerr, treasurer.

↕ ↕ ↕

Admiral Fowler Opens SF Offices as Marine Surveyor

Rear Admiral Joseph W. Fowler, (ret) has opened offices in the Stock Exchange Building, San Francisco, as a marine surveyor and industrial consultant. Admiral Fowler formerly was in charge of the San Francisco Naval Base at Hunter's Point, headed the Navy repair headquarters at the San Francisco Ferry Building and recently has been in charge of inspection of all shore establishments.

PORT STEWARDS' ASSOCIATION OF THE PACIFIC COAST on its annual picnic at the Tourist Club in the hills back of Oakland in June. Not including the juvenile future port stewards and stewardesses, left to right, are: PATRICK FRANK CANNON, Matson; CHARLES KELLER, formerly with Interocean; RUSSELL TREVILLIAN, USAT; LEON CAVASO; PAUL BABCOCK, Pacific Transport; L. C. WHITMAN; JEFF VERNON, Moore-McCormack; GENE BLANK, Pope & Talbot; JACK BOLTS, Luckenbach; FRED STROMBERG; JOHN NELSON, Moore-McCormack; DEWEY PAINE, Coastwise; JOE GISLER; CON CRIMMINS, American President; JAMES McART, Pacific Far East; MARIO POLVERE, J. H. Winchester; TOM TAYLOR, Pacific Far East; HARRY CHRISTENSON, American-Hawaiian; TIM MULLEN, American President; GILBERT NELSON, Jr.; CHARLES GRAYSON, American President, and AL BISSELL, Weyerhaeuser. Kneeling: DEWEY HART and GILBERT NELSON, Sudden & Christenson.

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Wickwire Rope is "Tissue Tested"

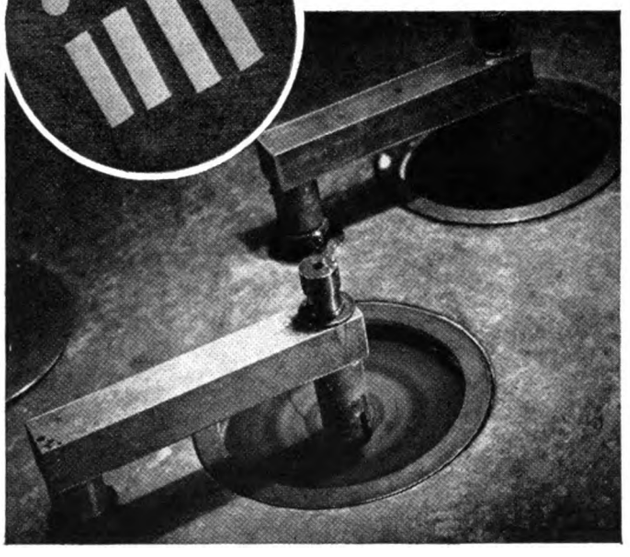
With the same scientific care a physician uses in examining human tissue, technicians in the Physical Testing Laboratory of Wickwire Spencer's Rope Mill test samples of wire imbedded in plastic "buttons." Samples from coils of wire are ground, polished, etched, microscopically examined and the findings recorded.

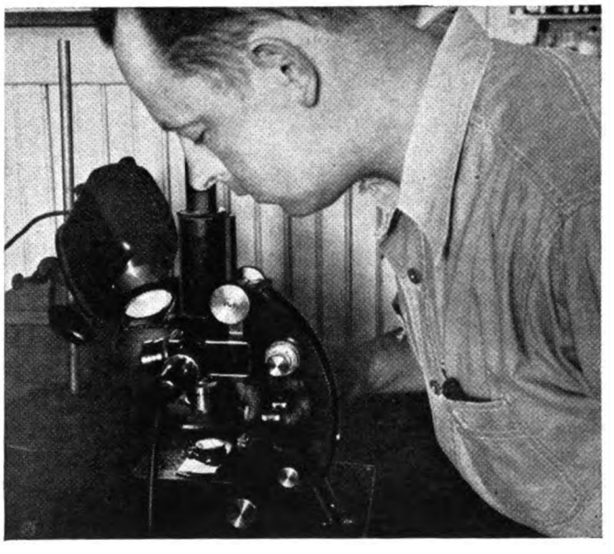
What's this got to do with wire rope? The grain size has an important bearing on the life span of the wire. Because the quality of the steel in the rope wire is just as important for dependable service as is the construction of the rope, Wickwire uses only such wire as passes the Physical Testing Laboratory's exacting standards.

For the utmost in performance, safety and long life, specify Wickwire Rope. It is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed. Call on Wickwire distributors and Wire Rope engineers to help solve your wire rope problems and supply the right rope for your needs.

HOW TO PROLONG ROPE LIFE AND LESSEN ROPE COSTS

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made work easier and rope last longer. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write, Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Massachusetts.





WICKWIRE ROPE

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. **EXECUTIVE OFFICE—500 Fifth Avenue, New York 18, N. Y.**

SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Philadelphia • Tulsa • Fort Worth • Houston • New York

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SHAFT ALLEY (continued) Chatter

A Lady Has Her Say on Ferry Problem and Free Enterprise

Ever since the days of early settlers many Puget Sound communities have relied on water carriers for freight and passenger transport. After canoes and rowboats came gasoline powered launches and stern wheelers. Beginning of the 1900's small steamers came into use. Later the transport of automobiles and trucks became a demand. Some of the steamers were converted into open-enders. By 1940 only a few of the old "mosquito fleet" of steamers existed. Vessels designed as combination passenger and motor car ferries had supplanted them.

During the transition there were rate wars, and numerous the near and actual receiverships among steamer and ferry operators. Over the period the water lines had become community builders because without modern water transportation the opportunity to progress was missing. With community development traffic volume increased and mutual benefits seemed apparent.

Low Profit

But, by 1930, the Puget Sound Navigation Company, operators of Black Ball Line, was the only major operator maintaining regular service. Organized in 1900 a profit and loss summary prepared by the Washington State Department of Public Service shows that during the years 1914 to 1929 inclusive the company had shown a profit in nine years. a loss in 7 years, for a total profit in 16 years of $89,082, on a fixed capital averaging better than $4,000,000 over the years.

During the years between 1930 and 1936 inclusive the company made money in four years and lost in three years for a net loss of $41,000 and indicating a profit of but little more than $48,000 over the 23 year period.

In view of those figures new rates were established by authority of the state regulatory body. Those rates remained substantially in effect until 1942 when the rates were voluntarily substantially reduced by the company to reflect, to patrons, earnings beyond a fair return resulting from increased patronage brought about by war conditions, particularly emphasized by the heavy traffic between Seattle and Puget Sound Navy Yard.

Between November, 1937, and late in 1941 the company purchased and put into service 13 of the San Francisco Bay ferries no longer needed there because of the construction of the Golden Gate and Oakland bridges. At the time many wondered the wisdom of the action. The war era proved company management had moved wisely and had not erred.

Rates Increased

With the war over and traffic reduced the company, also faced with greatly increased costs of labor, repair, fuel, and supplies, in some instances doubled and trebled, withdrew the voluntary reduction and gave notice that 1937 rates would be reestablished effective January 1, 1947. This was followed by notice of 30 per cent increase over the 1937 rate on February 15, 1947. The state department of transportation issued an order permitting the increase on a temporary basis, subject to issuance of coupons calling for refunds should the 30 per cent increased over 1937 tariffs be determined excessive pursuant to public hearing and department investigation.

In the summer of 1947 the department issued an order denying the 30 per cent increase but allowing 10 per cent. Court action and other company moves relayed a showdown until February 15 1948, when state officials were notified that even with the 30 per cent increase the company was operating at a loss and statuatory notice was being given that operations would cease on March 1. A liability of $640,000, representing refunds on 20 per cent difference if coupons were determined valid was also at issue and continues awaiting court decision.

The announcement brought into a flame the smoldering fires which commuters, Puget Sound island and Olympic Peninsula residents, and state officials had nurtured during the year of controversy. State officials threatened a state owned ferry system, ferry users assembled in mass meetings to protest, and the company became target for accusations in great variety.

(Continued on Page 30)

The lady writes a letter . . . MRS. LARRY PEABODY.

Pacific Transport Appoints Laidlaw as Owner's Rep.

Richard A. McLaren, president of Pacific Transport Lines, Inc., San Francisco, has recently announced the appointment of A. H. Laidlaw as owners' representative in the Orient for the company.

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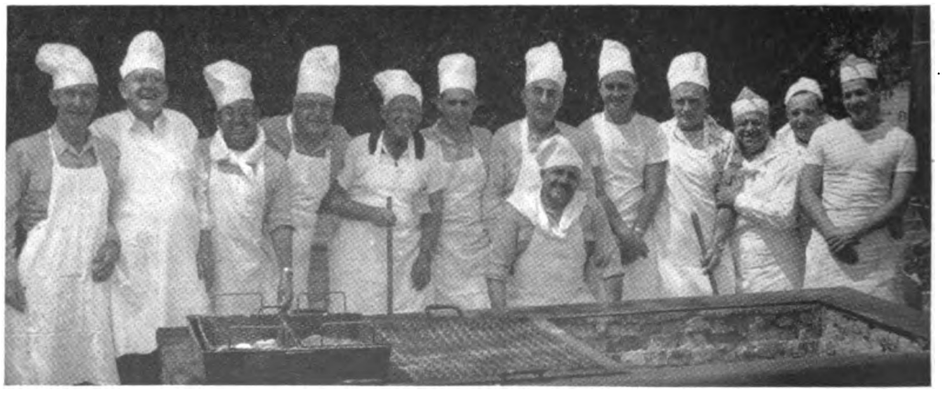
Record Turnout for Bilge Club Barbecue

A record turnout of nearly 800 attended the nineteenth annual picnic of the Bilge Club, southern California marine social fraternity, at San Pedro in June, participating in golf, baseball, tug of war, barbecue and other festivities.

Otto Miller, chief deputy collector of customs at San Pedro, won the golf tournament and now has his name inscribed on the perpetual trophy donated by the Bethlehem Shipbuilding division of the Bethlehem Steel Company.

NOT TOO MANY COOKS spoiled any broth at the barbecue at the Bilge Club picnic at the Palos Verdes Country Club at San Pedro in June. Left to right: ED L. RYAN, E. L. Ryan Co.; ERLE SMITH, Rubber Products Co.; ROY CAMPBELL, Federal Paint Co.; WALTER C. RICHARDS, Sr., Wilmington Iron Works; ANDY WILSON, formerly with the Maritime Commission; GEORGE BRADFORD, Time Oil Co.; HAMPTON NEERGAARD, Burns Steamship Co.; JOS. COSTELLO (kneeling), J. M. Costello Supply Co.; ED RICHARDS and WALTER C. RICHARDS, Jr., Wilmington Iron Works; SAM CAPELLA, Crescent Wharf and Warehouse Co.; JACK MELE, Marine Terminals Corp. and ROBERT HEDGES, Mele's son-in-law. P.S.—The steaks were swell!



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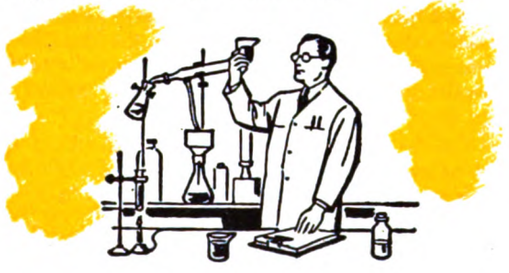

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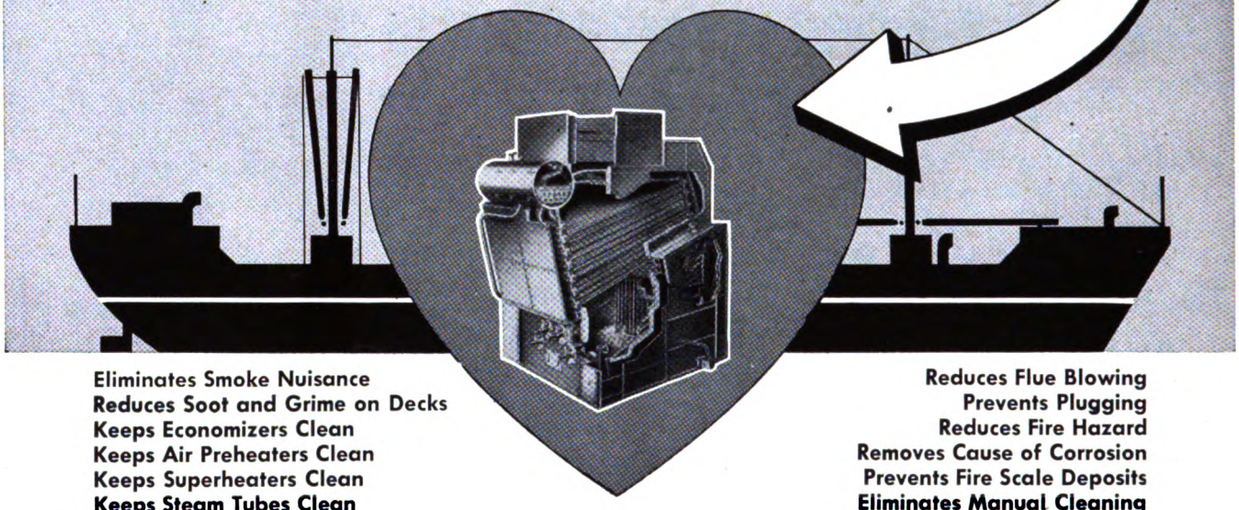

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the LOG
OF AMERICA'S MARITIME INDUSTRIES
Shipbuilding Naval Architecture
Ship and Port Operations
Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

AUGUST, 1948 Vol. 43, No. 9

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Editorial Features

Our Long Range Program—
How It Died at Birth 25
Western Europe—Shipbuilding and Operation 27
Washington Reporting 31
LSM to Tug Without Machinery Change 33
Matson Cuts Costs, Turnaround with Bulk
Sugar Loading Gear 34
Operating Ideas
Tons and Tonnage 42
How to Get the Best from
Your Condensed Air Ejectors 44
Cast Furnace Lining on Army Transport 51

Departments

Shaft Alley 16-20
Societies 38-40
Operating Ideas 42-44
Ports 48
Equipmentalk 54-60

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Story of Great Vessels Recorded in New Novel

The colorful stories of the world's leading ocean liners through war and peace are treated in a much deserved style by Frank O. Braynard in his book, "Lives of the Liners." From the largest U. S. Liner and the giant British QUEENS, down to the famous "skimming dish," no fewer than 300 ships are described with humor, feeling and human interest.

According to this book recently published, superliners are a product of an "outmoded philosophy." Airplane competition and the staggering initial cost of giant ships are listed as the two factors responsible for this marine development. Mr. Braynard states that the ship of the future will be a moderately sized liner like the AMERICA, designed for use as a luxurious cruise yacht in off-season periods. A single smokestack, or none at all, will characterize new liners. Four, three and soon even two stacked liners will be history.

The NORMANDIE, her early history, her feats and her fire are described with first hand information, much of which is unrecorded.

Forty-two pen and ink illustrations by Mr. Braynard are shown in "Lives of the Liners" published by Cornell Maritime Press.

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London Delegates Urge Shipbuilding Program

Shipping experts recently returned from a ship safety conference in London, warned that the United States will have to start building ships quickly in order to keep up with the passenger ships being built in Britain and France.

President of the Shipbuilders Council of America, Mr. H. Gerrish Smith, stated that Britain is building 100 passenger and combination passenger-cargo ships in her own yards, while France is building five. Unless a liner program is begun immediately he said, America would virtually disappear from the seas as a passenger carrier within a decade.

Mr. Smith was one of the 27 delegates to the International Conference on Safety of Life at Sea.

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Large Passenger Ships Are Company Liability

The Mariposa and the Monterey, two of the largest privately owned liners flying the U. S. flag, are a financial burden to the Oceanic Steamship Co., subsidiary of Matson Navigation Co., who have enlisted the aid of the Maritime Commission in searching for buyers.

When the vessels were used for Navy transports during the War, the company was allowed about $5,600.000 each for conversion in the yards of United Engineering Co., another Matson subsidiary. Costs far exceeded these allowances and construction was stopped on both a year ago. Experts estimate it will cost about $18,-000,000 to reconvert them.

Although they both operated profitably before the war between the West Coast and Australia, restrictions and laws in Australia virtually block travel to the U. S. They each carry only 4,300 tons of cargo which does not afford sufficient revenue to absorb any passenger department losses. Traffic experts say that for a profitable Australian run, 10,000 revenue tons of cargo must be carried. Liners that primarily carry passengers are a big risk in view of restrictive laws and travel by air.

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Alcoa CAVALIER Switched To Gulf Operating

The Alcoa CAVALIER will be transferred from New York to New Orleans and will operate out of the Gulf early in July, William H. Trauth, manager of the Southern division, announced this month.

Mr. Trauth said that the ship will supplement the service now maintained by the Alcoa CORSAIR and the Alcoa CLIPPER providing weekly express freight and passenger service from New Orleans to the West Indies and South America.

The Alcoa CAVALIER, completed in 1947, is a 15,000-ton ship with accommodations for 95 passengers and space for 85,000 tons of freight. The three ships will operate on 17-day round trip schedules, returning to Mobile.

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Black Diamond Seeks To Buy Victory Ship

The Black Diamond Steamship Co., have applied to the Maritime Commission for purchase of a Victory Ship, their first replacement of a prewar fleet of eight vessels. Their postwar operations to Antwerp and Rotterdam have been with chartered ships.

The application calls for a 17 knot vessel of the VC2-S-AP3 type. The company requested that the commission consider the application as being the resumption of a prewar negotiation and, therefore, accord it priority.

They currently own no other ships, but their chartered operations might be considered to be competitive with privately owned vessels of United States Lines Co., and Waterman Steamship Corp.

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General Steamship Agents For New Fast Freighter

Reputed to be "probably the fastest freighter in the world," the Swedish motorship NIMBUS, makes her debut on the Pacific Coast. The ship is entering the Pacific Australia Direct Line, which has operated continually in the Pacific Coast/Australian trade for more than a quarter of a century under the agency of General Steamship Corporation.

Built especially for the Australian trade, by the Gotaverken yard in Gothenburg, the NIMBUS has a cargo capacity of 8870 deadweight tons of which 47,000 cubic feet is refrigerated for perishable cargoes. The NIMBUS achieved a speed on her sea trials of 22.27 knots. Her contract speed is 19.5 knots fully loaded.

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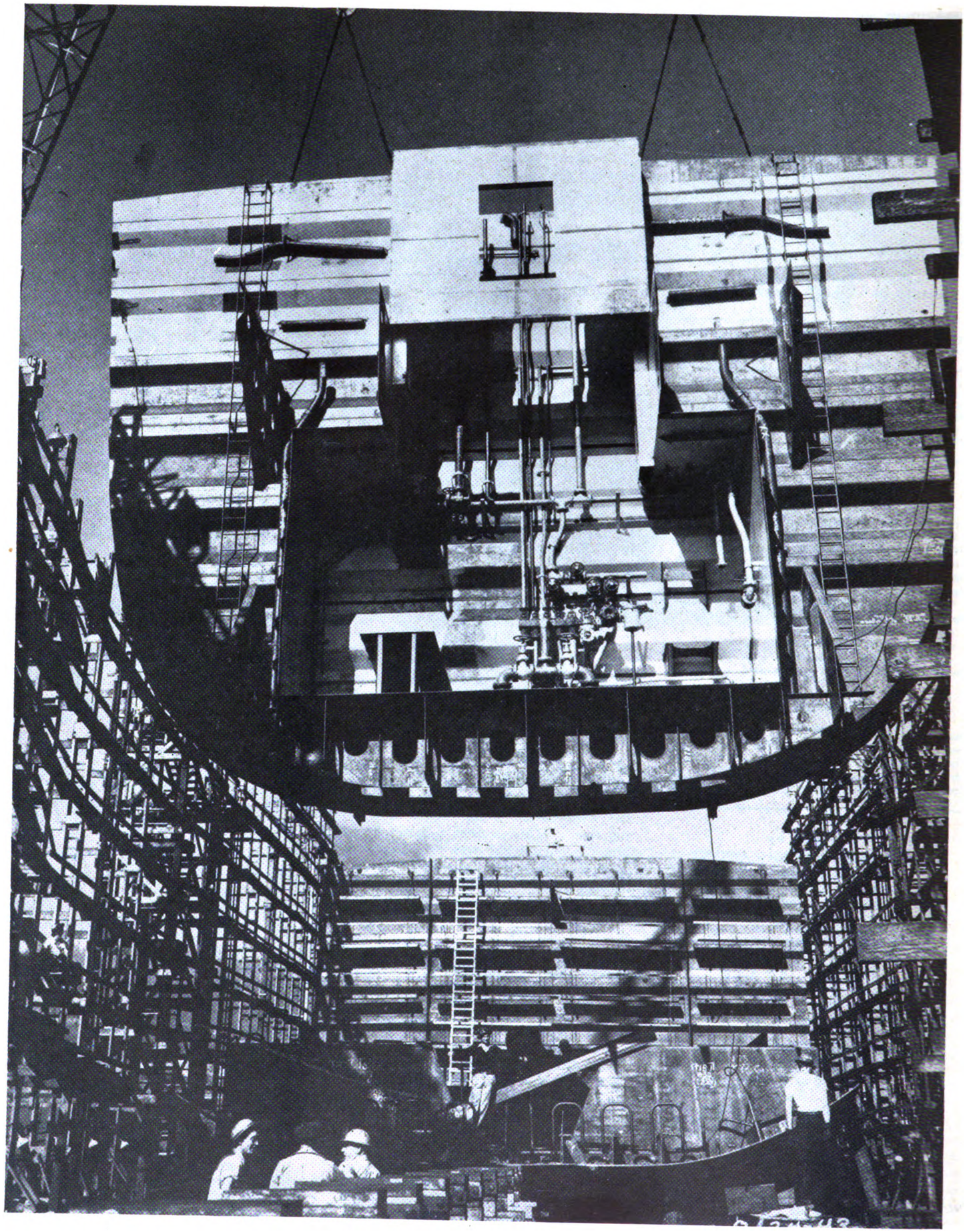

NO HOPE FOR THIS ACTIVITY NOW . . .

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OUR LONG-RANGE PROGRAM— HOW IT DIED AT BIRTH

The CIO Maritime Committee blitzes our shipbuilding program after the industry spends months of procrastination. Does the CIO want nationalization of shipping?

Legislation carefully designed to revive our American shipbuilding industry and provide for operation and maintenance of a strong American Merchant Marine, after being reported unanimously out of the House Merchant Marine and Fisheries Committee, passing the House on a voice vote, and reaching the committee rooms of the Senate, died with the Eightieth Congress. And with it died the hopes and aspirations of the entire maritime industry, including seamen and shipbuilders who watched their own unions eliminate thousands of jobs for this year.

To connect together the chronological chain of back-door events leading up to the final squashing of legislation which would have put American passenger ships on American ways in a matter of weeks is a task to dishearten anyone genuinely interested in the maintainance of the United States as a leading maritime nation. However, the story must be told, and everyone interested in an American Merchant Marine should know what happened in the frantic closing days of the Eightieth Congress, so that perhaps some remnants of the jettisoned legislation can be presented to the Eighty-first Congress when it convenes in January of next year.

The only party to the legislative program for an American Merchant Marine which might be called blameless is the Congress, and to its members who worked hard for the program an apology is due for a performance which consumed much of its time and bore little if any fruit.

A Long-Range Program

The story begins back in the early fall of 1947. Senator Wallace H. White, Jr. (R) Maine decided this was to be his last term in Congress. Before he left for good, after thirty years of faithful service to the nation and to the American Merchant Marine, he wanted to see a clear course set for the future of our shipping industry. He asked the industry, through the National Federation of American Shipping, to determine its long-range legislative needs. Frazer Bailey, president of the NFAS, announced at the Propeller Club Convention last October that the Federation had set up a committee to study the legislative needs of the industry, evolve a long-range program, and present to Senator White and the Congress a united viewpoint.

The committee spent approximately two months preparing its report for the consideration of the various associations which at that time comprised the Federation (American Merchant Marine Institute, Association of American Shipowners, Pacific American Steamship Association, and Shipowners Association of the Pacific Coast). Agreement could not be reached among or within these associations and the committee became deadlocked, wasting weeks of precious time while the Eightieth Congress raced toward adjournment.

Several times during the course of the next few months Senator White asked the Federation for its program. But still the members could not agree and therefore could not present a united front, a condition which the Senator had made to his introduction and support of the legislation in Congress. Eventually the Association of American Shipowners withdrew from the NFAS over a few of the issues to which it could not, as a group, reconcile itself. Within a few weeks after the withdrawal of the AASO, a program was evolved and agreed upon by the Federation, and at the same time the AASO prepared its own legislative program.

The Last Thirty-two Days

In the closing weeks of the Eightieth Congress H. J. Res. 377, a bill embodying the legislation desired by the AASO, was introduced in the House by Representative Alvin F. Weichel, (R) Ohio, chairman of the House Merchant Marine and Fisheries Committee. The bill embraced these two main points:

(1) Construction differential subsidies for domestic shipping.

(2) Accelerated depreciation.

On May 10, 1948, exactly 32 days before the adjournment of Congress, Chairman Weichel introduced H. J. Res. 398, which embodied nine of the eleven points recommended by the NFAS. These were:

(1) Provide that the Government pay for all national defense features, including excess speed for military purposes; and other features in excess of requirements for similar features on competing foreign ships.

(2) Provide for a fixed construction differential subsidy of 50% for all vessels in both domestic and foreign trades.

(3) Provide that each passenger vessel may be owned by a separate corporation with limited liability, and have separate operating differential subsidy contracts.

(4) Adjust the depreciation of reconstructed vessels to correspond to the prolonged life of the vessels.

(5) Provide that if the U. S. defaults in its subsidy contract obligations, or by law or regulation prevents the operation of such vessels, the owner may make redelivery to the U. S. and receive an amount equal to the shipowner's actual investment.

(6) Make it unlawful for the ICC to permit discriminatory and non-compensatory rates by land carriers on competitive water traffic.

(7) Amend trade-in provisions of the Merchant Marine Act of 1936 to furnish incentive for building modern vessels and an orderly replacement program by liberalizing trade-in allowance, and permitting turn-in of vessels not less than 12 years of age.

(8) Re-examine rate on deferred payments to make as reasonable as possible but not in excess of cost of such money to the Government.

(9) Repeal the requirement that the Maritime Commission investigate and specify manning, wages and working conditions on subsidized vessels.

Objection Without Prejudice

After several weeks of hearings, *with no opposition whatsoever from any labor group,* these bills were *unanimously* reported out of Committee as H. J. Res. 412 and 413. They were then placed on the unanimous consent calendar of the House to be brought up for a vote. Representative Robert W. Kean (R) N. J., objected without prejudice (was not opposed to the legislation itself but objected to voting on it without further opportunity for debate).

Through a waiver of the House Rules, however, the two bills were brought to the floor despite Representative Kean's objection, and were passed by a voice vote without a single "nay" being heard. There is one significant point to note: *the waiver was obtained through pressure brought to bear by locals of the Industrial Union of Marine & Shipbuilding Workers of America, CIO, on Speaker of the House Joseph Martin.*

In the meantime, Senator White had introduced companion bills in the Senate, but to save duplication of effort had delayed consideration until the House legislation was passed. Shortly after the House bills were passed they went to the Senate Interstate and Foreign Commerce Committee, of which Senator White is chairman.

This was in the last week of Congress when the log-jam of legislation had piled high and every member was laboring overtime to get the work done. It was only through the urging of Senator White and Senator Owen Brewster (R) Maine, that the legislation was slated for consideration in the Senate.

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Out of a Clear Sky—
A Bolt of Lightning

And then the bomb exploded which blasted any hope of our laying keels for another year! Out of a clear blue sky the CIO Maritime Committee shot a bolt of lightning. Senator White received a wire from Seth Levine, Research Consultant for the CIO committee, demanding hearings be held on the two bills to give the labor unions an opportunity to voice their objections.

Describing the legislation as a "raid on the Government" the CIO Maritime Committee circulated a mimeographed sheet among Senate members decrying in vivid language such a "steal" for the shipowners. But apparently the CIO members were as confused as the Senate was bewildered at this point. Delegations from the shipbuilding union's locals were pressuring for passage of the bills. Joe Curran, NMU president, telephoned Senator White stating that the NMU was all out *for* passage of the bills, and then an hour later called the Senator again and said he wished to modify his statement—the NMU was all out *against* passage of the legislation.

"Raiding the Government"

Representatives of the shipowners, being informed of the last-minute charge that they were "raiding the Government," immediately phoned John Green, president of the shipbuilders' union. They attempted to discover specifically what his objections were to the proposed legislation. The answer they received was reiteration of the phrase "it's a raid on the Government." Point by point they went over the legislation with Green, and still received from him no specific objections, with one exception, and this the shipowners immediately offered to delete. In fact, Green admitted that he had not even studied the bills, which seem to indicate that he was relying solely upon the advice of his underlings.

For the legislation to be considered in the Senate, with but two days left in the session, it would necessarily have to be placed on the unanimous consent calendar. With the last-minute opposition of the CIO it was out of the question to even consider the bills so they were shelved.

A Bobtailed Bill

However, due to the immediacy of the situation requiring the construction of passenger ships, a "bobtailed" bill, emasculated to the irreducible minimum, was reported out of the Senate Interstate and Foreign Commerce Committee by an 8 to 2 vote, Senators Reed of Kansas and Tobey of New Hampshire dissenting. This new bill provided only the following:

(1) A 50% construction differential subsidy limited to two years.

(2) Limitation of liability on passenger ships.

(3) Increasing the down payment on passenger ships from 25% to 40%.

In a subcommittee hearing on this watered-down version of the original bills, Vice Admiral Mills of the Department of National Defense, and Frazer Bailey, president of the NFAS, expressed the belief that the shipowners would not build passenger ships if such a sizeable increase were made in the down payment requirements.

The subcommittee (Senators Brewster, Hawkes and Magnuson) reported that it was the Maritime Commission which requested the increased in down payments, to which Admiral Smith, Commission Chairman, replied that it was not the Maritime Commission but *one* Commissioner who advocated it.

Not Even a Caesarian

A quick poll of the shipping companies planning to build new passenger ships as soon as enabling legislation was passed showed that they would be unwilling to go ahead on the basis of an increased down payment despite the flat 50% construction differential subsidy. This, together with the opposition of Senators Tobey and Reed, and the CIO Maritime Committee, killed all hope for salvaging anything from the wreckage of our long-range shipbuilding program.

That is how our post-war American Merchant Marine died at birth, failing to be saved even by Caesarian methods. The most difficult thing to understand is how maritime labor, and shipbuilding labor especially, which would be the greatest beneficiary from any shipbuilding program, could so effectively and completely cut its own throat.

From the confused—and obviously uninformed—positions taken by both Joe Curran and John Green (who are generally considered responsible labor leaders) it leaves only the conclusion that they depended entirely upon the Washington representatives of the CIO Maritime Committee. The key to the situation may well be found in a remark made by a representative of the shipbuilders' union when asked by Admiral Smith for his alternative to the proposed legislation. His answer; "Nationalization."

The CIO Objects

Since Seth Levine handled the last-minute blitz by the CIO Maritime Committee (Hoyt Haddock was out of town), the Editor of The LOG interviewed him to determine the motives behind the move. Here are the CIO objections to the proposed legislation:

(1) A provision which would make funds in the tax referred deposits of a subsidized company available to replace operating losses. This would possibly allow the companies to hold out during a strike without financial loss. (This is the provision which the shipowners offered to delete from the bill when talking with John Green.)

(2) The CIO objected to the flat 50% construction differential subsidy on the basis that it would destroy the principle of "parity" as established in the 1936 Act. (This point was extensively argued in the House Committee hearings and apparently met with the approval of Committee members since it was reported out unanimously.)

(3) They objected to the provisions for limited liability (setting up a separate corporation for operation of passenger ships whereby the parent company would not be responsible for financial failure) on the basis that there would be no incentive to try to keep the ships sailing "when things get tough."

(4) They objected to the construction differential for domestic shipping.

(5) They objected to the reduction from 17 to 12 years in age for trade-in allowance at the going market rate rather than on the basis of actual cost and depreciation.

A Reason, An Attitude, A Deal, And a Switch

However, Seth Levine admitted that the basic reason the CIO Maritime Committee blitzed the legislation was the belief that "the shipowners will build the ships anyway without these bills."

When questioned as to why the CIO had remained silent during the extensive hearings in the House during which every one of these points was thoroughly discussed pro and con, his chief reason was that the "attitude" of Chairman Weichel was "not conducive to getting a hearing."

When further pressed as to why they did not specifically request permission to appear before the House Committee to voice labor's opposition to the bills, he stated that they did not "dream" the legislation would pass since the AASO would be fighting the NFAS. "We woke up too late after the Federation and the AASO had made a deal," he said.

Asked to verify the fact that Joe Curran had pulled a last-minute switch from favoring the bills to opposing them, Levine admitted this was so and offered as an explanation that "Joe was reached by the wrong influences. When we told him what was in the bill he was against it." When confronted with the fact the locals of the shipbuilding unions were in Washington pressing for the legislation, and were largely responsible for getting the House Rules waived, he explained that they were "a few locals who thought they could get some work for their own shipyards."

Fire From Heavy Guns

To an interested and unbiased observer of this entire farcical low comedy enacted in the halls and committee rooms of the Congress it was apparent that many devious forces were at work. It seemed that more people were interested in seeing that they got what they wanted for their individual group than they were interested in seeing a fine American Merchant Marine sailing the seas.

This debacle was basically and primarily the fault of the shipping industry. They had no right to expect passage of these bills. They asked Congress to pass legislation nearly as basic as the Merchant Marine Act of 1936 without benefit of floor debate in the House and without Committee hearings or floor debate in the Senate. And certainly there was no

(Continued on Page 51)

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WESTERN EUROPE

SHIPBUILDING AND OPERATION

A LOG report on shipping activities in Britain and Western Europe

By ARTHUR E. JONES
Newport, England

Shipbuilders of Britain and Europe look back on 1947 as a year of splendid achievement in replacing the toll of vessels lost during the war. They were made in the face of shortages of materials, especially steel.

Then came the critical analysis of the Marshall Plan by the State Department in which it was urged that a cut be made in the European program of building 11,231,000 tons by 1951, of which more than half is projected by Britain.

No criticism was levelled against the program for passenger vessels, or oil tankers, for it is not considered unduly large, since oil requirements in Europe are rising; but drycargo ships projected are thought open to question.

European nations justify their plans on the ground that for some of them, shipbuilding is a basic industry and labor is not interchangeable. Moreover, most fleets are far below 1939 levels and a large number of vessels must be scrapped in the next few years because of obsolescence. Another argument is that shipping is the most economical and effective method by which the nations can earn foreign exchange and at the same time reduce their requirements for Marshall aid.

European Shipbuilding Survey

In a survey of the shipyards of Europe, Britain's output is by far the most important. An aggregate of 1,269,286 tons gross, made up of 609 and two-thirds vessels of all classes, was launched during 1947. Marine engineering establishments produced propelling machinery totalling 1,479,149 h.p. Clydeside's share was 198 vessels, totalling 376,434 tons and 489,489 h.p. of propelling machinery.

Opinions vary upon the output of the Clyde and other British yards during the year. Some hail it as satisfactory, taking into consideration the difficulties under which the work was performed. Others complain that output was reduced by half because of shortages, and overheads, which cannot be reduced and have to be borne by the smaller number of ships built.

British Steel Shortage

To reach their targets, firms had sought and found loopholes in red tape and acquired more steel than the Government had allocated the industry. Sir Stafford Cripps, setting the steel production goal for 1948 at 14,000,000 ingot tons, declared that shipbuilding would receive only the same allocation as in 1947, which is an approximate cut of 20 per cent on what the yards actually received.

When the steel cut was announced for the shipbuilding industry, protests came from all quarters. Pressure was so strong that Sir Stafford Cripps will ease the cut, though the quantity of steel to be released to the industry will still be less than the quantity actually used in 1947.

Sir Frederick Rebbeck, of Harland and Wolff, said that reduced steel deliveries would mean his firm could not meet the growing orders for vessels for the export markets. It might even be impossible to complete ships already in the stocks. He suggested that the Government would be well advised to direct to the shipbuilding industry the million tons of steel they propose to export this year. "By putting the steel into the building of ships we export both the steel and the value of our labor," he said.

Effect of the cut in steel supplies to the industry will be a reduction in completed ships, and trade unions see that this will inevitably result in growing unemployment in the yards. Some firms are of the opinion that it will not be possible to deliver ships due for export this year, until 1950.

Twenty-five Year Peak

Shipping under construction in British yards at the beginning of 1948 was greater than the amount being built at any time for more than 25 years. It was 2,173,361 tons, which shows an increase of 236,299 tons over the December 1946, figure. This total was 54.57 per cent of the world's tonnage under construction at January of this year. Forty percent of the merchant vessels, representing 31 percent of the tonnage, is for export, mostly for Norway, Portugal, the Dominions, France and Argentina. Excluded from these figures are those of oil tankers, of which 50, aggregating 447,595 tons out of a world total of 84 vessels of 742,084 tons, were being built.

There is some hope that research will enable the industry to overcome some of the difficulties brought about by the steel shortage. For many years now, the industry has been struggling on a ration of steel. Engineers and scientists have done a lot of research to improve methods of design and fabrication. They have developed high-tensile structural steels to a fine art and have carried out many experiments in light alloys and adaptations of welding.

Britain's "Ship of the Year"

Ship of the year was the Cunard White Star Line's CARONIA, of 34,000 tons gross, launched by Princess Elizabeth at the Clydebank yard of John Brown and Company, Limited.

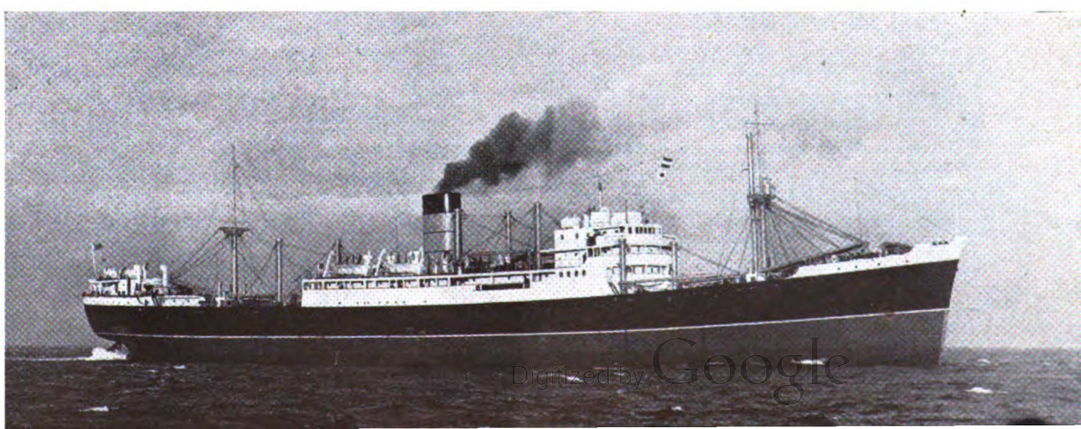
Designed primarily for the North Atlantic, and secondly as suitable for cruising in tropical waters, she was built in the same berth as H.M.S. VANGUARD.

The CARONIA'S overall length is 675 feet and her beam 91 feet. Bows are well raked and reminiscent of the clipper-ship era, and her stern is of the cruiser type. Thus she has the massive proportions of the great Atlantic liner with the feminine grace of a cruising yacht, and appears to be a milestone in the development of the passenger liner.

Masts have been confined to a single tripod structure, with none of the tracery of supporting rigging. Guys are also absent from the big single funnel, and there are no external cowl ventilators or isolated deck houses to mar the symmetry.

There are nine decks, with the promenade deck having a length of 495 feet, where the principal public rooms are a first-class observation lounge, cocktail bar, lounge, writing room, smoking room, library, cinema-theater, cabin lounge and garden lounges. The sun deck has an open-air lido and swimming pool with an overlooking veranda cafe on the deck above. In accordance with modern requirements, lifeboats are carried in gravity davits, carefully placed not to block the view seawards and there are motor boats of orthodox pattern.

SS ARABIA—9,600 ton cargo liner of the Cunard White Star fleet.



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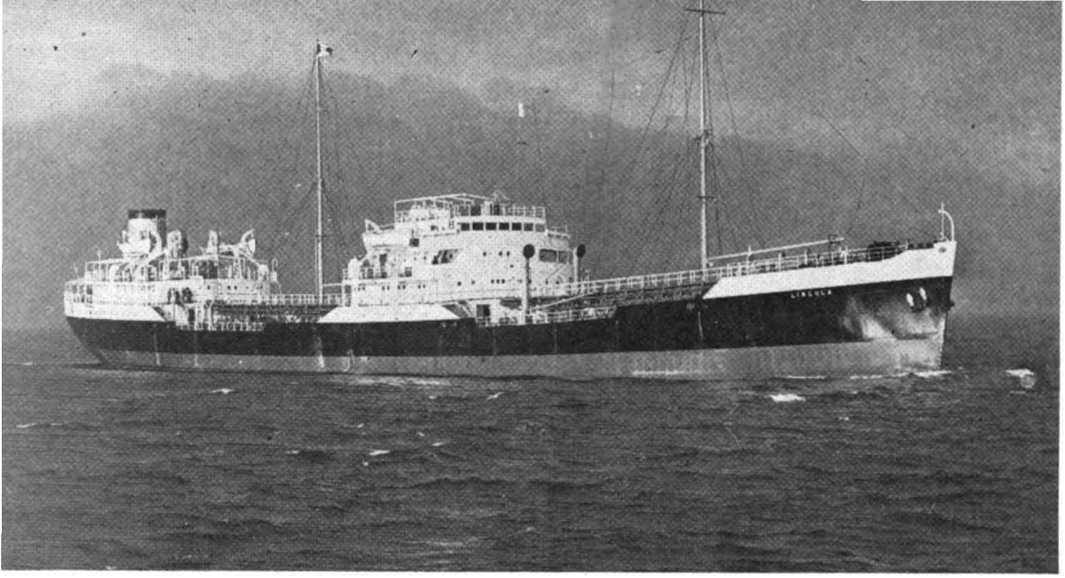

MV LINGULA—oil tanker built by Harland & Wolff Limited for the Anglo Saxon Petroleum Company.

New Cunard Ships in Service

The CARONIA also has six single-screw launches fitted with deck shelters and driven by 130 h.p. diesel engines which, in addition to lifeboat service, will enable passengers to land comfortably and quickly when the ship is anchored off-shore when on cruises.

Below decks accommodation is the last word in comfort. Public rooms and cabins are air-conditioned, with facilities for iced water on tap and regulated ventilation and heating.

Propulsion is provided by six oil-fired boilers with a pressure of 600 lbs. per square inch, supplied to twin screw geared turbines at a temperature of 800 degrees F. At full power the high pressure turbine runs at 3,686 revolutions per minute, and intermediate low pressure turbines at 1,990 R.P.M. Propeller speed given is 140 R.P.M.

During the year, Cunard White Star put into service three other vessels—cargo-liners ASIA and ARABIA, sister-ships, and the passenger cargo-liner MEDIA.

ARABIA'S keel was laid two days after the launching of the ASIA, on July 18, 1947. She has been designed to carry a total cargo deadweight of 9,600 tons at a draft of 27 feet 6⅞ ins. Service speed is 16 knots, and she has been built to Lloyd's 100 A.1. class. Gross tonnage is 8,730, length 480 feet and beam 34 feet. Cargo capacity is—grain, 494,494 cu. ft., bale 459,369 cu. ft., with additional insulated space of 129,731 cu. ft. Hatchways are served by twenty ten-ton derricks and a heavy derrick capable of taking 50 tons.

New Turbine Features

Several new features, based on the latest research, are included in the turbine propelling machinery which drive a single four bladed bronze screw. Principal items are special section of turbine blades, special glands of the labyrinth type, hollow low pressure rotor and special drainage of the low pressure turbine exhaust section to prevent erosion. The oil-fired boilers have a working pressure of 480 lbs. per square inch and a temperature of 750 degrees F. at the superheater outlet. The ARABIA was built by Sir James Laing and Sons Limited, Sunderland.

The MEDIA (13,700 tons), a John Brown and Company product, has been designed for the London-New York service. Overall length 534 feet and beam 70 feet, her speed is 17 knots and she carries 251 passengers. A sister ship, the PARTHIA, is being prepared for service early in 1948 at the Belfast yard of Harland and Wolff, Limited.

Contributing to the ships' smart appearance, with their shapely bows and cruiser sterns, is their streamlined superstructure, curved at the forward end and embodying a continuous promenade with large windows on either side. The continuous upper deck is surmounted by a forecastle and long bridge with superimposed promenade and boat decks. Passenger accommodation includes well laid-out public rooms on the promenade deck, with a cocktail bar, long gallery, drawing room, library and a lounge with large windows on three sides.

Cargo capacities in cubic feet are—general, 371,430, insulated 60,050.

The MEDIA is propelled by two sets of double reduction geared turbines taking steam from two watertube boilers and capable of maintaining a service speed of 17 knots, with an ample reserve of power.

Elderman Line Building 333,500 Tons

One of the world's largest shipping concerns, the Elderman Group of companies, suffered colossal war losses. At the outbreak of war the group owned 105 ships with a carrying capacity of 920,000 tons. Sixty ships were destroyed, including 38 of the famous "City" ships, all in the 9,000-11,000 tons class.

At the conclusion of the war a huge building program was embarked upon and so far they have had completed seven new ships averaging 10,500 tons deadweight. The latest is the CITY OF JOHANNESBURG. Built by Barclay, Curle and Company, Glasgow, the CITY OF JOHANNESBURG is the fourth of a fleet of five to be completed for a Britain-South Africa service. The other four "Cities" of the fleet are NEW YORK, LONDON, HULL and PRETORIA, all of which will be shuttling on this service by mid-1948. The London to Capetown journey will be completed in 15 days.

Elderman Lines have another eight vessels under construction for the Mediterranean and Portuguese runs, and have placed orders for 16 cargo liners of 11,000 tons deadweight each. To meet immediate needs they have acquired 12 Liberty ships.

Big P. & O. Ship for Australian Run

P. and O. and British India companies are also well embarked on an ambitious program to recoupe war ravages. Two great passenger vessels for Australia and the Far Eastern waters will be completed during 1948.

For the Australian service the companies will have the 29,000 gross tons HIMALAYA, which will be the largest ever to fly the P. and O. flag. She will have accommodation for 1,200 passengers, space for 260,000 cu. ft. of general cargo and 235,000 cu. ft. of refrigerated cargo. Her engines will develop 42,500 horse-power, giving a speed of 23 knots. Vickers-Armstrong Limited are the builders.

The ship for the Far Eastern service is to be called CHUSAN, reviving an historic name in the P. and O. fleet. Expected to be ready by the middle of the year, the CHUSAN will be 24,000 tons gross. The largest vessel designed for the Straits and China service, she will carry a thousand passengers.

Blue Star Line Program

During the year 1947, the Blue Star Line took delivery of two passenger and refrigerated cargo vessels—the ARGENTINA STAR and BRAZIL STAR, built for their South American service by Cammell Laird and Company, Limited.

There are two other ships of this class under construction at the same yard—the URUGUAY STAR which will be completed in May this year, and the PARAGUAY STAR should be completed about the middle of the year.

All four vessels are similar in appearance; single screw turbines, with oil-fired high pressure water tube boilers, giving the vessels a normal service speed of 16 knots. They are fitted with insulation and refrigerating machinery of the most up-to-date type.

In March they will take over the first of two large motor vessels from Harland and Wolff, Limited, Belfast, the mv IMPERIAL STAR, intended for the Colonial service. Gross tonnage is about 12,500, with twin screw Harland and Wolff engines, giving a speed of about 17 knots. The second vessel is expected to be ready for service early in June.

Conversion and Repair Work

In addition to the stupendous tonnage of new vessels sent down the shipways during the year in British shipyards, there was a vast field of work not accounted for in the official statistics. Two years ago the QUEEN ELIZABETH headed a procession of the best of British liners refitting after war service. It is expected that seventy will have been reconditioned by September, 1949.

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Though most of the work requires little steel, contractors often have little liking for it because the rhythm of their yards suffers, and shortages of fittings and materials cause long delays.

Shortages Cause Delay

Fittings are the great stumbling blocks to speed in all the shipyards, and many a vessel goes off the stocks without its last ha'porth of tar. This applies particularly to ships built for British owners; those for foreign buyers receive higher priority by the various Government ministries.

It has been known for work on a ship to be delayed weeks simply because the firm could not get delivery of a small electric motor worth $500. Trials sometimes have to be undergone before minor fittings have been obtained.

Despite all the shortages and delays a number of firms broke output records.

By launching 16 vessels totalling 183,509 tons gross during the year 1947, Harland and Wolff Limited, who have yards in Belfast and Glasgow, have broken a 33-year-old record for the shipbuilding industry. The firm had themselves set the record up in 1914, when the aggregate gross tonnage of launchings was 182,759 tons. The building comprised passenger and cargo liners, a whale factory ship, two cross-channel passenger and cargo vessels, three tankers and a large naval vessel. The bulk of the work was done in the Belfast yards.

Bright Outlook for British Yards

Provided the materials are made available, 1948 should be a good year for shipbuilding in Britain. Reports from the various centers indicate that most firms have many contracts in hand, extending well beyond this year. On the Clyde it is estimated that there are contracts for 150 new vessels of 850,000 tons gross. On the North-East coast there are 214 vessels of 866,796 gross tons under construction. In the shipyards of Northern Ireland there are contracts sufficient to keep the yards going for about three years.

It is interesting to note that about 50 percent of the new vessels are for foreign owners. The biggest customer is Norway, and other valuable contracts have come from France, Argentina, India, Portugal, Iceland, Holland, the Dominions and the Colonies.

Naval Construction Rumored

There is a continuing stream of contracts for the conversion of vessels already in use from coal to oil burning. Reconditioning work is a tardy process, and has to compete with new shipbuilding in the struggle for essential materials.

The scrapping of several British battleships has given rise to rumors that a new naval shipbuilding program will be embarked upon. At the moment there is little naval work being carried out, and builders of merchant shipping are urging that this type of work be deferred for two years so that the limited supplies of materials can be used on new merchant vessels and liners until some of the leeway has been made up.

The new turbine steamer, SILVERBRIAR (10,700 tons) will soon leave the yards of Joseph L. Thompson and Sons, Limited, for New York. The ship will take her place in the regular cargo liner service of the Silver Line between America and the East. A feature of the ship is that the forward funnel is linked with a rounded bridge structure and contains the captain's rooms and office. The ship has a service speed of 16 knots.

Cunard White Star say that early this year they hope to have two of their larger ships, the BRITANNIC (27,000 tons) and the AQUITANIA (45,000 tons) in service before the summer. Both are now undergoing refitting. It is understood that the AQUITANIA will be used on the U.K.-Canada route.

European Outlook

Europe and Britain owned about sixty per cent of the world's merchant shipping tonnage before the War, and their yards produced 75 per cent of the world's annual total of new vessels. From 1939-1945, 22,000,000 gross tons were sunk, representing 62 per cent of the 1938 figure. So important do the shipbuilding countries believe the replacement of losses to be that they are estimated to have spent $500,000,000 of their precious dollar reserves to buy ships built in the United States for war purposes, thus temporarily bridging the gap in their requirements. Half the present tonnage of cargo vessels less than five years old are composed of the Liberty and Empire types. One-fifth of the vessels are over 25 years old.

Estimates of their total tonnage as the building progresses are (in Units of 1,000,000 deadweight tons): 1947, 43.1 (Dry cargo 32.0, Tankers 11.1); 1948, 45.8 (Dry cargo 33.7, Tankers 12.1); 1949, 48.6 (Dry cargo 35.6, Tankers 13.0); 1950, 51.2 (Dry cargo 37.4, Tankers 13.8); 1951, 53.6 (Dry cargo 39.2, Tankers 14.4). By comparison, 1938 figures were 46.2 (Dry cargo 36.1, Tankers 10.1).

The building projected also involved payments in foreign exchange by participating countries for building carried out in yards other than their own. The total tonnage to be built in foreign yards is 6,000,000 deadweight tons, and the cost in dollars will be in the region of $1,250,000,000. These figures exclude Germany throughout, as there the construction of seagoing ships is prohibited.

Until European fleets reach the adequate stage in 1951 they will be dependent on a substantial but diminishing volume of dry cargo shipping services from dollar sources, estimated at 10,300,000 tons in 1948; 7,200,000 in 1949; 4,500,000 in 1950 and 2,200,000 in 1951.

Norway Building in Volume

Norwegian shipyards, as an example of the increased energy put into shipbuilding among the continental countries, almost doubled their 1946 output of steel ships last year. Twenty-nine new vessels, aggregating 41,000 gross tons were delivered. In 1946 the figures were 15 ships of 25,000 gross tons.

In the middle of the year Norwegian builders had orders on their books for 180 ships of 300,000 gross tons—enough to keep them busy for at least three years. Furthermore, some 200 vessels are due for periodical survey and classification, which will provide more work for them. As it is, a lot of repair work has been turned down by contractors.

About 1,000 more workers entered the 27 Norwegian shipyards affiliated to National Shipbuilders' Association, bringing their number to 13,000. There are vacancies for another 2,500 workers.

Europe Not Neglecting Research

One of the most popular vessels on the North Atlantic run, the ISLE DE FRANCE, is lying in the Penhoet shipyard at St. Nazaire undergoing repairs and alterations. Though details of her internal improvements are not yet released, it is known that after her extensive overhaul she will be more economical in fuel consumption. The three funnels and their stays have been replaced by two squat ones of greater diameter.

Another French ship, having a funnel amputated, is the VILLE D'ALGER,

SS MEDIA, Cunard's 13,700 ton passenger-cargo liner built by John Brown & Co. on the Clyde for London-New York service.

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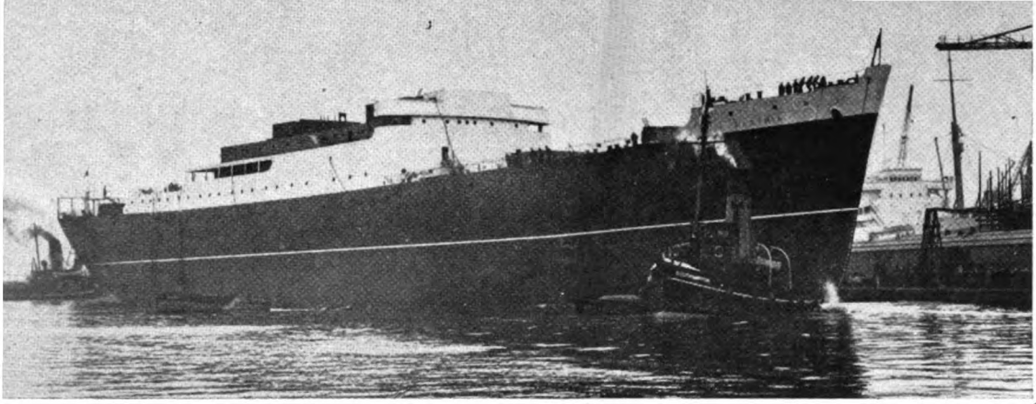

LAUNCHING THE SS PARTHIA, sister of the MEDIA, built by Harland & Wolff Ltd.

which was sunk in shallow water near Marseilles in June, 1944. Refloated, she has been taken to the yards of Chantiers de Provence, and early this year will start service to North Algeria. A vessel of 10,729 gross tons she will reappear with a single funnel.

Despite the emphasis necessarily lying on speed of production, European firms have not neglected research work, one of the most promising fields of which is that of the gas turbine. Though no gas turbine sets are yet being used in marine propulsion, except for a small motor gunboat of the British Navy, experiments have established that it will compete both for weight and consumption with the best steam turbines. However, more research is needed into the burning of low grade fuel and problems of speed reduction and maneuvering.

The set in the British gunboat is fitted on the center shaft, with Packard engines driving wing shafts consisting of a Metropolitan-Vickers gas generator, developed from an F.2. jet propulsion unit, coupled to a four-stage reaction output turbine and developing 2,500 h.p.

Swiss firms, all of whom are in advanced stages of their research, are Brown Boveri, Sulzer Brothers, Excher-Wyss and Oilikon.

Messrs. John Brown and Company, C. A. Parsons, British Thompson-Houston Company, are British firms engaged in work in this field.

There can be no doubt that shipping and shipbuilding will remain one of the basic industries in Europe. What progress can be made this year will depend almost entirely upon the quantities of steel which can be made available for the industry. Plans have been prepared for large-scale work, though in many quarters there are doubts whether they can be accomplished this year.

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A Lady Writes a Letter

(Continued from Page 20)

Chartering to Counties

Ferry service stopped on March 1, but by March 8 arrangements had been made for bare boat charter of company ferries to counties with the company operating the ferries for the counties, at rates 30 per cent higher than those put in effect on February 15, 1947. The ferries continue to operate on that basis with rates being watched with idea of decreases from month to month should operations justify the move.

State operation of ferries has advanced to the stage of traffic surveys for the purpose of interesting investment bankers in floating a bond issue to finance construction of new ferries and toll bridges. Plans for 60 and 100 car ferries and some strictly passenger carriers have been drawn with specifications handed to shipbuilders for bids.

The situation has been discussed in the press, at mass meetings, on the radio, and in many cases no punches have been spared. State officials and the public have been outspoken. Other than specific notices required by law the company has made few, if any, statements. Among those speaking on the radio on behalf of a community group was Betty McDonald, author of "The Egg and I." Her comments drew the ire of another woman, the wife of one of many company stockholders, mother of three children before whom their parents and grandparents were being berated. That evening upon retiring she could not sleep, she rose from bed and put her thoughts in writing, and then without further deliberation mailed the script to the daily press. She says she is not a literary genius. However, in her housewifely way, she has spoken in the interest of free enterprise and privately owned merchant marine and of comparative costs with a force greater than is accomplished by many paid writers. Her letter follows:

Mrs. Peabody's Answer

"This letter is my own. It has not been read, censored or approved by anyone else. I make this statement because I am a member of the Peabody family. My husband is one of the sons of two people who were, in every sense of the word 'true Americans,' two people who helped build the Black Ball Line and Seattle.

"For months I have read articles and listened to radio speeches trying to break down that company, so far without success. The latest speech was broadcast June 4 by a woman who won fame and notoriety for writing a hilarious and ridiculous book, most of her material taken from the private lives of people who were friendly towards her. She lives on Vashon Island, and enjoys Seattle privileges without the burden of paying city taxes. It seems to me that when facts and figures are quoted a normal, intelligent person would first be sure they were correct. Obviously she hasn't done that—and if the island is reduced to a slum it will not be because of the Black Ball Line.

"Eggs seem to be her one subject of conversation. They are important to me also because of the price. Instead of four dozen for $2, which I was paying a few years ago I now get two dozen and very little change from my $2.

"Incidentally, I understand it will cost me 5 cents instead of 2½ to send my children to school on the bus next year, an increase of 100 per cent. The Seattle Transit System is not a privately owned public utility, owned by people who have a monopoly.

"A 40 per cent rate reduction was demanded of the Black Ball Line but in June we were told: 'That 40 per cent figure was just a potshot.' Under the circumstances a potshot won't do.

"I am not a literary genius or a politician, just a housewife. Also, I am not a hypocrite, so I won't say the welcome mat will be properly swept and shining, but anyone interested may come out at any time and see one of the wealthy people living off the revenue from the outrageous and unfair ferry rates, incidentally, remember that I pay the same price for shoes, butter, eggs, meat and bus fares and for every other commodity needed to live and rear a family, and so does everyone working for the Black Ball Line.

"If these people want to live where the state runs and controls everything, there are countries run that way, but I think that free enterprise should be allowed to exist in these United States of ours. It would be interesting to know what privately owned utility is next on the list of these noble people.

"After a few years an egg is no longer fresh and usable. Did I detect a faint odor coming over the air waves or was it just my imagination?" Signed, Mrs. Larry Peabody.

CUNARD WHITE STAR LINER CARONIA now under construction in Britain.

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WASHINGTON Reporting

By The LOG'S Own Correspondent

Bill for Expediting Travel Set For New Congress

A bill seeking to remedy what were generally conceded to be the most troublesome impediments to travel outside of this country—visa requirements and centralized passport issuance — is being readied for the Eighty-First Congress which will convene next January. The bill, which was drafted with the guidance of the Immigration and Naturalization Subcommittee which will handle the legislation, will amend the Alien Registration Act of 1940 by authorizing the execution of executive travel agreements to expedite international travel.

This new bill (S. 2886), which Senator Brewster of Maine introduced, "seeks to give the President permissive authority to negotiate Executive travel agreements with friendly foreign governments of non-quota countries to permit travel to and from the respective signatory countries, by native-born nationals and resident nationals for the preceding eighteen years upon presentation of a passport, travel card, or other document showing identity and nationality."

"In addition," Senator Brewster said, "the bill permits the 350 offices of the Immigration and Naturalization Service throughout the United States to accept applications for and issue passports within the United States under regulations prescribed by the Secretary of State."

The bill is being studied by the various concerned Executive Departments so that it can be submitted to the new Congress for immediate consideration.

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Industry Investigating MC's Cost Differential Figures

The shipping industry, through the National Federation of American Shipping, and enlisting the aid of Colonel Arthur Syran, shipping head of the ECA, is beginning an investigation of the Maritime Commission's figures on the cost differential for ship construction from which the Commission determines the amount of subsidy a U.S. ship purchaser will receive.

The present subsidy figure (around 39%) is not deemed adequate by prospective shipowners to warrant construction of passenger ships at the present time. It is strongly felt throughout the industry that the Commission is a little naive in determining foreign construction costs and fails to take into account the "grant-in-aid" funds indirectly employed to great advantage.

These "grant-in-aid" funds are essentially loans made by this and other countries to Western Europe which we have little intention of ever collecting. Some industry members point out that coal purchased by these funds and used to make steel for shipbuilding are computed by the Maritime Commission on a cash basis, whereas in actuality the coal is a gift. It is to determine matters such as this that has prompted the industry to analyse the Commission's figures.

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Shipping Legislation in the Eightieth Congress

During the second session of the Eightieth Congress 164 bills affecting the shipping industry were introduced. Fifty-two bills of interest to the industry were passed by both Houses and enacted into law.

Three measures of particular interest to the shipping industry were defeated through its opposition:

(1) Foreign aid shipping provisions.
(2) Stowaway bill.
(3) Great Lakes—St. Lawrence Seaway.

Six measures supported by the industry were enacted into law:

(1) Ban on sale and charter of war-built vessels to non-citizens; Public Law 423, enacted April 3, 1948.
(2) Extension of Maritime Commission authority to sell, operate and charter vessels, and the Coast Guard authority to waive navigation and inspection laws; Public Law 423, enacted April 3, 1948.
(3) Navy salvage facilities; Public Law 513, enacted May 4, 1948.
(4) Internal Revenue Act: Amend to exempt earnings on vessels and airlines not under American flag; Public Law 514, enacted May 1, 1948.
(5) Shipping Act of 1916: Amend; Public Law 518, enacted May 10, 1948.
(6) Tariff Act of 1930: Amend to exempt $300 purchases from import duty; Public Law 540, enacted May 19, 1948.

In four instances bills to which the industry generally was opposed were enacted into law:

(1) Radiotelegraph officers: Licensing (H.R. 1036); Public Law 525, enacted June 19, 1948.
(2) Admiralty Jurisdiction: Extension (H.R. 238); Public Law 695, enacted June 19, 1948.
(3) Interstate Commerce Act: Amend to authorize ICC to exempt cruise travel (H.R. 6078); Public Law 633, enacted June 12, 1948.
(4) Longshoremen and Harbor Workers' Compensation Act: Amend (S. 2237); Public Law 757, enacted June 24, 1948.

Forty-two bills covering 16 subjects to which the industry was generally opposed were not enacted. These include:

(1) Inclusion of seamen under the Fair Labor Standards Act.
(2) Oil pollution.
(3) Interstate Commerce Act; inclusion of water carriers for reporting.

Eleven bills covering five subjects on which the industry offered amendments were not enacted. Three measures for which amendments were recommended were passed by both Houses.

Legislation supported by the industry on 19 subjects failed of enactment. The most important of these include:

(1) Long range shipping program.
(2) Overtime-on-Overtime.
(3) Coast Guard Officers; participation in hearings.
(4) Repeal of transportation taxes.
(5) Panama Canal tolls.

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IMCO Convention Before Senate for U. S. Ratification

In the closing days of the Eightieth Congress, President Truman filed with the Senate for ratification the arrangements just completed for an Intergovernmental Maritime Consultative Organization under the United Nations.

The results of the Convention are exhaustive, stated Secretary of State Marshall, in a letter to the Senate accompanying the copy of the convention. Extracts from Marshall's letter follow:

"The establishment of the Intergovernmental Maritime Consultative Organization will not result in duplication of functions of any other world organization. There does not exist at this time any other permanent international organization with similar functions in the same field. In fact, the lack of a suitable international shipping organization is the chief reason for the establishment of the proposed Organization. It will be a specialized agency related to the United Nations in conformity to the pertinent provisions of the Charter of the United Nations . . . It is understood that the establishment of the Organization will, together with the International Civil Aviation Organization, the International Telecommunications Union, and the World Meteorological Organization, complete the establishment of the specialized agencies considered by the United Nations to be essential to deal with technical and economic problems and coordinate activities of world-wide concern in the fields of transport and communication.

"It is believed that all phases of the intergovernmental shipping problems, involving economic factors, safety factors, and restrictive business practices, should fall within the scope of a single world shipping organization within the framework of the United Nations. The convention for this purpose drawn up at the Geneva Conference has the support of the Department of State, the Department of Commerce, the United States Coast Guard (within the Treasury Department),

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WASHINGTON

and the United States Maritime Commission. Representatives of the National Federation of American Shipping, representing the interests of the shipowners, were on the United States delegation to the Geneva Conference. A representative of the Shipbuilders Council of America was also on that delegation. Both of those organizations have expressed themselves as favoring the convention.

"The proposed Intergovernmental Maritime Consultative Organization will not act with respect to labor matters, such matters being left to the International Labor Organization, in which the United States has participated as a member since August 20, 1934.

"In summary, the Organization is designed to provide cooperative machinery for dealing with technical matters affecting shipping engaged in international trade, encouraging the adoption of high standards affecting maritime safety and efficiency of navigation, encouraging the removal of unnecessary restrictions and discriminations by governments affecting shipping engaged in international trade, considering unfair restrictive practices by shipping concerns, considering matters involving referral to the Organization by any organ or specialized agency of the United Nations, and providing for the exchange of information among the governments on matters under consideration by the Organization . . ."

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Peace Feelers Extended by Railroads in Fourth Section Rate Controversy

The Association of American Railroads has recently extended a tentative hand for peaceful settlement of the rate controversy which has been vehemently argued before the ICC with little if any result by the coastwise and intercoastal shipping industry.

According to informed sources in Washington, the AAR has admitted that "some" of the fourth-section rates are discriminatory and would possibly be willing to compromise if the shipping industry would agree not to press for a national survey of the rate structures. Such a survey would take the ICC approximately three years to complete and would involve exhaustive studies.

The domestic shipping industry has expressed a willingness to proceed with preliminary talks and a series of conferences may possibly be held this summer to see what can be worked out. The Association of American Railroads is now polling its members to get their reaction to such a move and find out how far individual members are willing to go in readjusting these fourth-section relief cases.

Government Seeks New Shipping Team to Advise MacArthur

Colonel Arthur Syran, who headed the three-man mission sent to Japan to advise General Douglas MacArthur on the reestablishment of Japanese and Korean shipping and terminal operations, has returned to this country and taken over the top shipping post in the ECA.

E. E. Anderson, former traffic manager for American Mail Line at Seattle, and William S. Reagh, former marine superintendent of American President Lines at Wilmington, California, who accompanied Syran on his mission, are expected to return at the end of the year.

The Army is now seeking a new team to replace these men, who were originally selected by the industry through the National Federation of American Shipping. If the Federation does not come up with recommendations, then the Army plans to appoint its own personnel.

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Congress Votes Funds for Army Engineer Projects

In the last minute rush of legislation, Congress approved a total of $573 million for Army Engineer Civil works projects. The amount specified for rivers and harbors totaled $166,989,100.

The sum of $71 million was appropriated for maintainance of the nation's vast system of ports and inland waterways, and $2,050,000 for preliminary examinations and surveys of proposed improvements. Advanced planning funds for rivers and harbors was $1,924,000.

The Rivers and Harbors advanced planning funds carried the specific designation that $1,390,000 be used on the following projects:

Arkansas River, Arkansas & Oklahoma	$500,000
Buford Dam, Georgia	400,000
Alabama-Coosa Rivers, Alabama & Georgia	290,000
Calumet-Sag Channel, Illinois Waterway, Illinois	200,000

The remaining $534,000 appropriated for advanced planning may be allocated to projects included in the Corps of Engineers' requests to Congress, with one exception; it is stipulated that no planning money is to be used during the year on the Cross Florida Section of the Intercoastal Waterway.

The $88,488,100 earmarked for construction on rivers and harbors is for 79 projects, located in 33 states and Alaska. Among important projects with appropriations of $1,500,000 or more in the new fiscal year are:

McNary Lock & Dam, Columbia River, Oregon & Wash.	$22,000,000
Mississippi River, between Ohio & Missouri rivers	9,000,000
Missouri River at Fort Peck, Montana	3,700,000
St. Marys River, Michigan	3,000,000
Jim Woodruff Lock & Dam, Florida	3,000,000
Missouri River, Kansas City, Mo., to Sioux City, Ia.	3,000,000
Morgantown Lock & Dam, Monongahela River, W. Va.	3,000,000
New York & New Jersey Channels, New York	2,200,000
The Intracoastal Waterway, Galveston District, Tex.	2,119,000
The Intracoastal Waterway, New Orleans District, La.	2,000,000
Missouri River, mouth to Kansas City, Mo.	2,000,000
Cleveland Harbor, Ohio	2,000,000
Neches-Angelina Rivers, Texas	1,818,100
Coos Bay, Oregon	1,500,000

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NFAS Report On U. S. Merchant Fleet

The privately owned active American merchant fleet is now slightly larger than before the war, and on June 1 consisted of 1,117 vessels compared to 1,092 in 1939. While the private fleet has been increasing, Government owned ships chartered to private companies have shown a steady decrease.

In its monthly summarization of the U.S. merchant fleet, National Federation of American Shipping reported that the privately owned fleet now consists of 681 dry cargo vessels and 478 tankers, a total of 1,159 vessels of which 42 are temporarily inactive.

While the aggregate privately owned fleet is slightly larger than prewar, the Federation commented that the number of passenger ships in the fleet are today less than one-third the number in service before the war.

The summary showed that the number of Government owned ships chartered to private operators had declined by more than 100, from 833 May 1 to 724 on June 1. In previous months the decline of such vessels had averaged about 75 per month.

The Federation ascribed the rapid decline in chartered vessels to reduced volume of cargo offerings; the expansion in size of foreign merchant fleets; exportation of coal by England and Poland to certain European countries, and delays necessarily involved in setting up of organization and procedures under Marshall Plan operation.

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The value of export and import shipments through Gulf ports in 1947 showed an increase of 68% over 1946, and 105% over 1939.

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According to British sources, Japan may build two 18,000 DWT tankers for Norwegian interests. Japanese shipyards are reportedly working on a five-year shipbuilding program involving 312,000 tons of cargo ships, fishing vessels and coasters.

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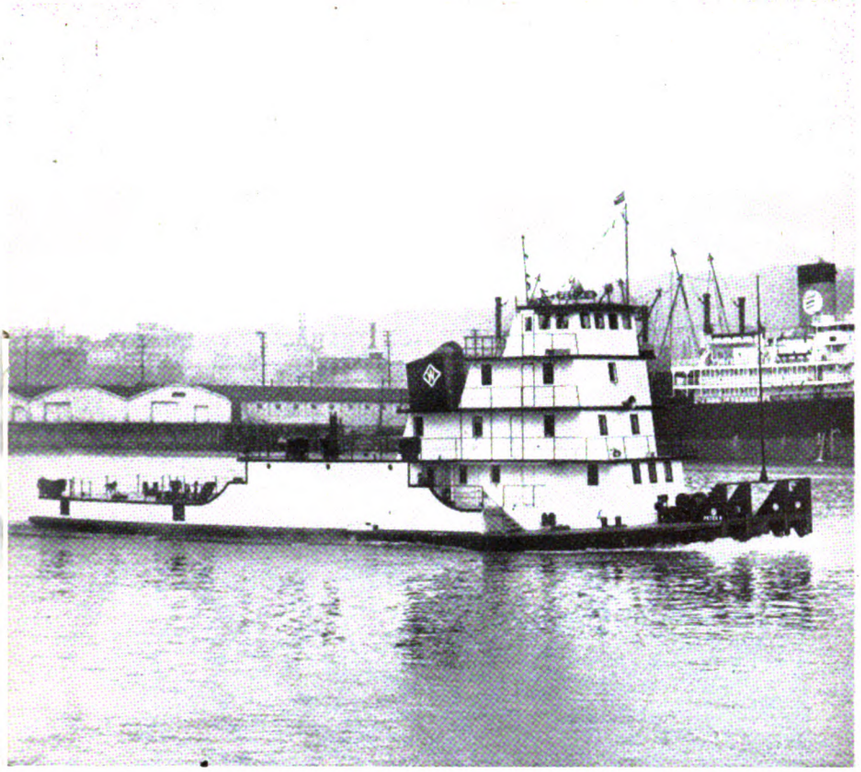
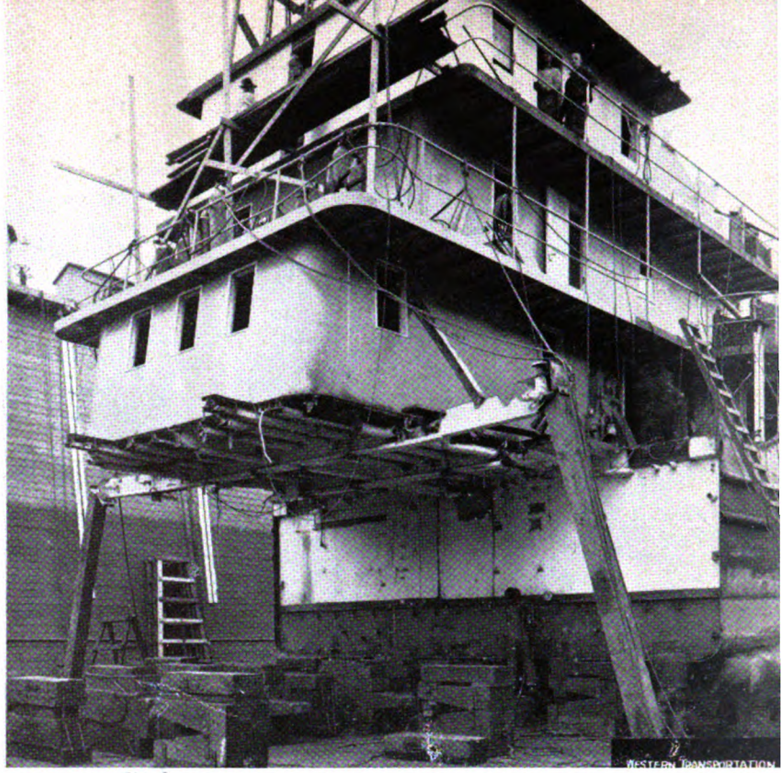


Tug PETER W.—Formerly LSM No. 388. *Photo, Courtesy Hal Cooley Laboratories*



GIRDERS and shores support forward end of superstructure of converted LSM preliminary to swinging in new bow.

FROM LSM TO TUG WITHOUT MACHINERY SPACE CHANGE

An LSM with the new look is the converted LSM No. 388 in operation in the service of Western Transportation Company, Portland, Oregon, as the tug PETER W.

Converted by Albina Engine and Machine Works, Portland, the work was a unique undertaking in that the original 203 feet six inch length has been reduced to 145 feet by cutting off approximately 100 feet of the original forward section and adding a new pusher bow section, and complete reconstruction of the superstructure. All the machinery and the hull aft from original bulkhead 17 below the superstructure deck are remaining from the original vessel. Added to the vessel is the new 40 foot pusher bow section, new superstructure, monkey rudders, a larger size Sperry steering gear, and a ⅜ inch plate projecting 19 inches entirely around the ship at main deck level for guard and catwalk. The pilot house is fitted with Kearfott windows.

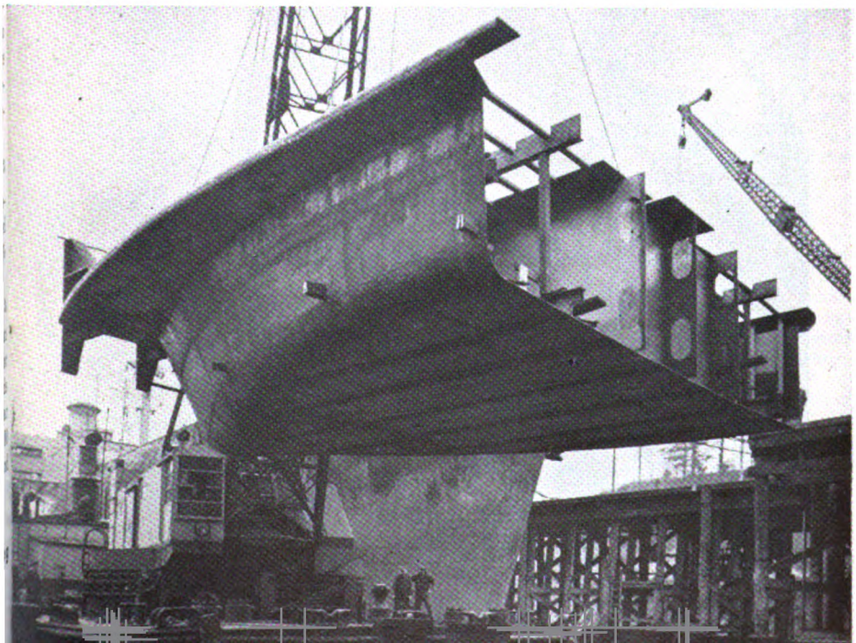
The new four deck superstructure provides lounge, galley, dining room, and quarters for cook, watchman and oiler on the main deck. The superstructure deck quarters a crew of six, two to a stateroom, and the first mate and second engineer. Accommodations for the pilot, captain and chief engineer are on the texas deck, with the pilot house taking up the fourth deck.

With the exception of change of engine controls from dual system to central controls no major changes were made in the engine room. The result is the original 100 KW diesel auxiliary power plants, two auxiliary compressors, and the two 10 cylinder, 8⅛ x 10 opposed piston, direct drive, Fairbanks-Morse diesels, developing 1800 hp each, and other original machinery remain in the vessel to make her probably the most powerful riverboat in the Columbia river area.

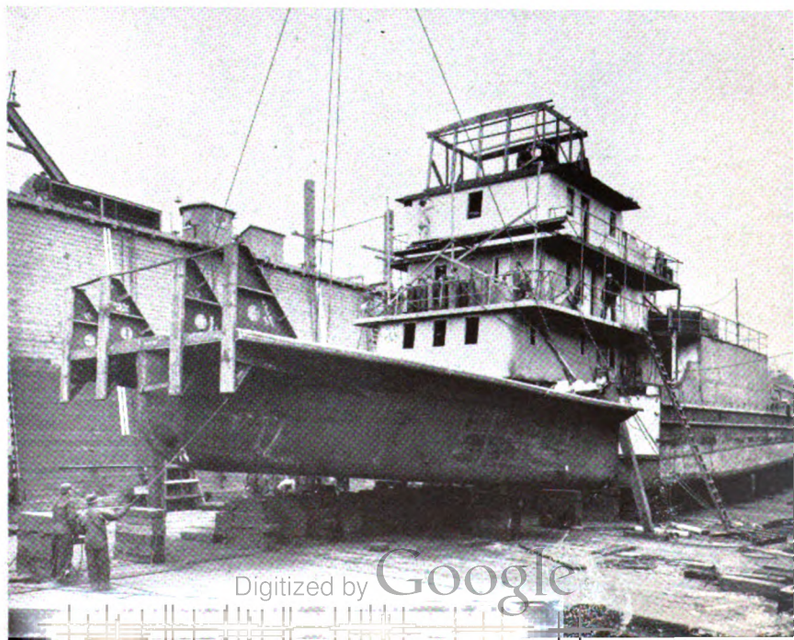
Interesting feature of the conversion is the method used in removing the old forward section and replacing with a new bow section. All fabrication was complet-

(Continued on Page 36)

NEW BOW SWINGS into drydock from construction barge.



NEW BOW SLIPS into place under overhanging superstructure.



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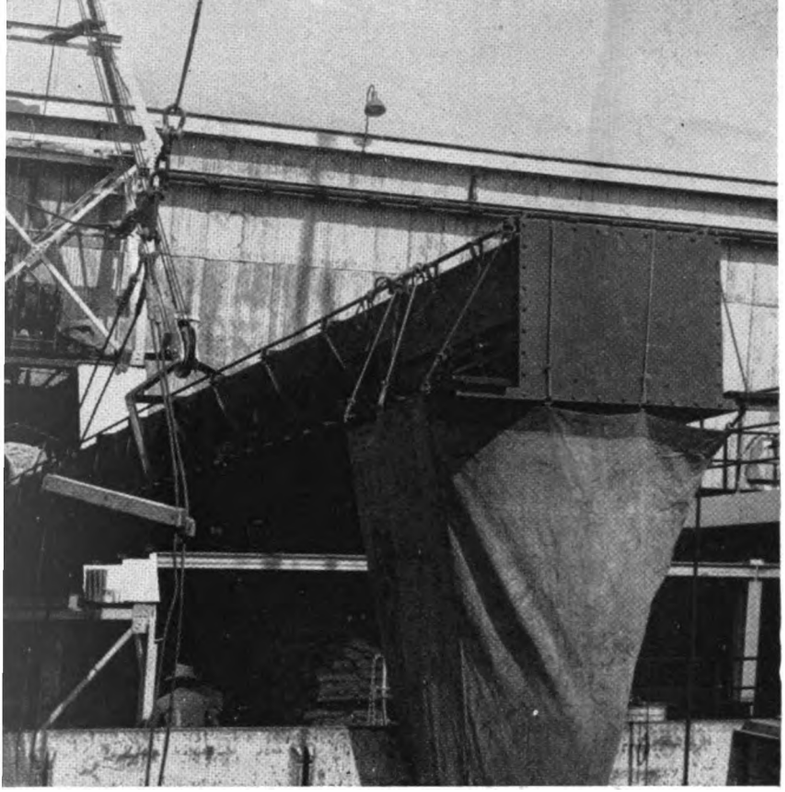
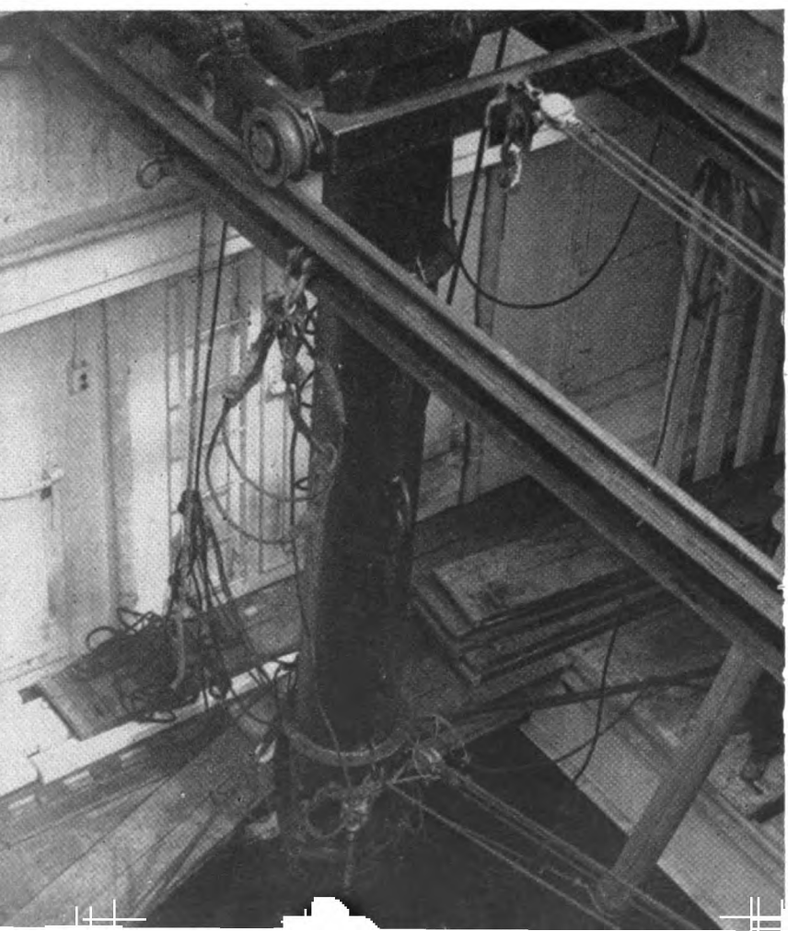


TRANSFERRING bulk sugar to a ship by mechanical process begins with the equipment shown above. Conveyor belts running through the shed bring the bulk sugar from warehouses. When the sugar reaches a position opposite the hold being loaded, it is plowed onto the belt of the travelling gantry crane (long structure projecting over hatchway) and dropped into the canvas chute.

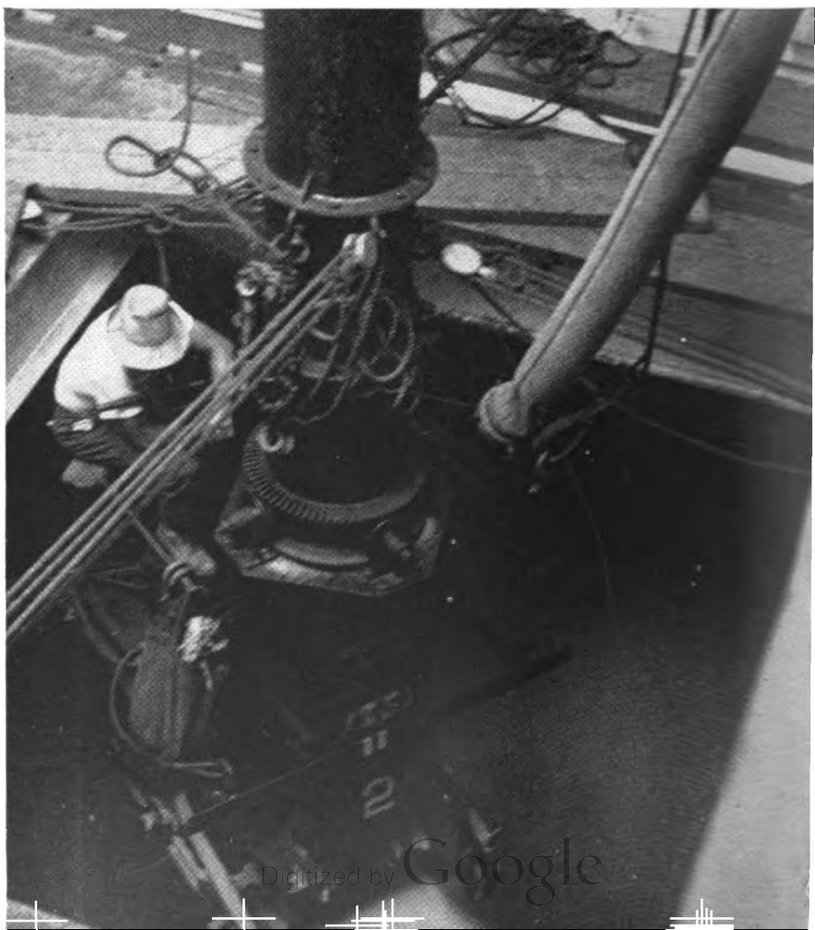
FROM THE CANVAS chute the bulk sugar is dropped into a hopper, which can move athwartship on rails to the desired position in the hold, as shown in cut.

MATSON CUTS COSTS, TURNAROUND WITH BULK SUGAR LOADING GEAR

THIS CUT shows the equipment which takes the sugar from the hopper at the upper 'tweendeck down to the "trimmer" in the lower hold.



"TRIMMING" the sugar in the lower hold is accomplished by this suspended spreader which sprays it about the hold wherever the operator directs.



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By L. L. WESTLING
Refrigeration Engineer
Matson Navigation Company

Adverse economic forces have been at work in Hawaii. War completely cut off the supply of gunny bags in which sugar has been traditionally handled, they having their source in India and Ceylon. New sources of sugar appeared close by the consuming markets of the West. The 2400 miles standing between Hawaii's sugar mills and the mainland raised barriers of cost in transportation which were added to the cost of successive handling of the bags. The problem of the unavailable gunny bag and the problems of multiple handlings demanded a solution. Doubling of labor costs and the deteriorating efficiency of men pyramided the handicaps that the industry had to surmount if it was to survive. It was solved, and many a laboring man in Hawaii and on the Coast has yet to fully realize that his livelihood has been assured, by a job-saving device developed for the mechanical loading and unloading of bulk raw sugar carried in the holds of ships.

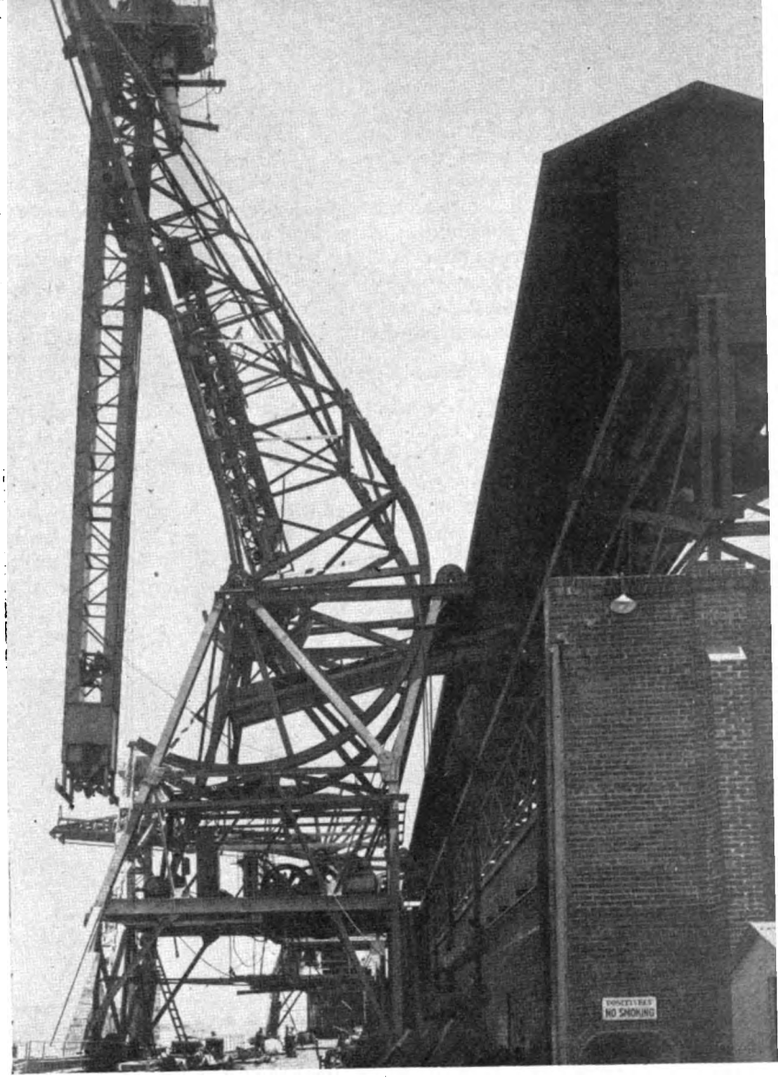
While the handling of bulk sugar is not new, yet at no place has the operation been as highly developed nor of greater size nor represented a larger investment than in the Hawaiian trade.

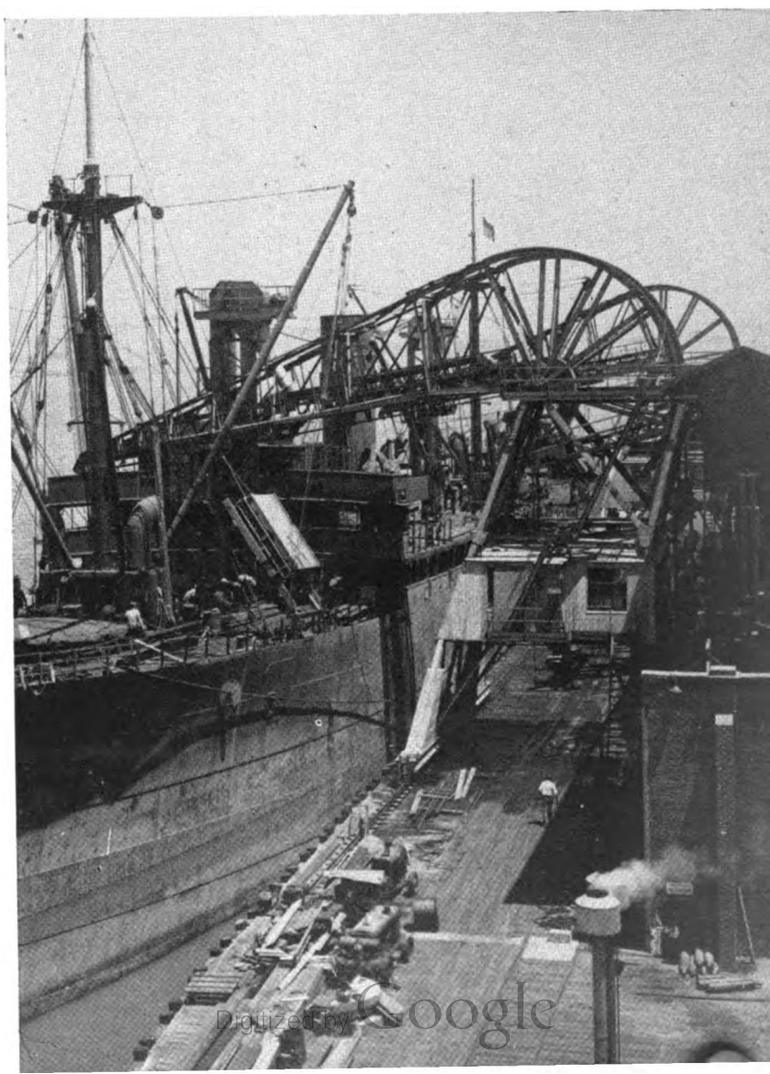
The design of the apparatus and the development of the methods of operation was a complete innovation and was evolved from accelerated but extensive study and experiment. Hawaiian sugar like Hawaiian cane is peculiar unto itself. It had been observed only in bulk form between the centrifugal molasses extractors and the bag filling machines while it was moist and warm and on its best behavior. Oddly enough its characteristics and behavior as a bulk product during long exposure in storehouse or ship were unknown and proved full of surprises.

Inherent Nature Precludes Pneumatic Handling

Raw cane sugar is a golden colored crystal with an enveloping film of molasses. The characteristics of this crystal and its envelope vary with each of many mills that dot the Islands. The properties are further modified by the atmospheric conditions of temperature and humidity in which it is produced, transported and stored, and its resultant behavior is all but unpredictable. When the sugar is exposed to moist atmospheres it will flow in a manner delightful to materials handling engineers, possesses a definite angle of repose, and the slope of a mound follows normal laws of bulk goods. Exposed to a dry atmosphere it becomes annoyingly unruly, will stand in vertical or overhanging walls, and when it does move it is like a thing alive. Summer conditions in the upper San Francisco Bay at the Crockett Refinery produce interesting effects. With a dry northerly wind the crusty surface will support the weight of a man, and with the change of the wind to southward a man would sink almost knee-

DISCHARGING INSTALLATION at Crockett, installed by Matson Navigation Company. The travelling tower shown in this cut is capable of a multiplicity of movements. It moves along the wharf to shipside on rails. The boom can raise the elevator (vertical section extending from boom head) clear of the berth. The boom is maintained in position by heavy cables leading over the two quadrants to a winch. It has compensating counterweights which are successively effective with the varying leverage as the boom moves from horizontal to vertical positions. Cable-tension electric controls prevent excessive crane loads on the ship's bottom and cause the boom to automatically raise and lower with the change of tide or the ship's draft.





THE BOOM POSITIONED over hatchway is extended horizontally in this cut. The elevator is in the hold. The elevator can be moved in and out of the divided boom to facilitate athwartship positioning in the hold. All movement of the travelling tower, boom, and elevator are remotely controlled from switches attached to long portable cables leading from the electric motors. This enables the operators to move about to the most advantageous position. The elevator has three chains running over sprockets each of which carries two rows of buckets. The elevator discharges onto a series of rubber belts which run along the boom and through the tower. From here the sugar drops onto the warehouse collector belt.

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deep in the same sugar.

The uninitiated observer will invariably ask the same question — why not handle the material pneumatically as they do with grain, copra, etc.? Quite obviously such possibilities have been exhaustively investigated and it has been conclusively proven that raw sugar's behavior is such that it will respond only to direct mechanical handling methods.

Initial Installation at Kahului

The initial Island installation for storing and shipping bulk raw sugar was made at the port of Kahului on the Island of Maui. The sugar is loaded at the mills on side-tilting beds of narrow-gage railway cars, or on large trucks similarly equipped. The loads are brought to the terminals where they are weighed, gross and tare, and dumped into a hopper pit. The sugar is fed onto rubber conveyor belts, carried up an incline to the top of a large storehouse consisting of a series of hopper-bins where the sugar is stored pending the arrival of a ship. An overhead belt carries the sugar to the bin where it is to be stored and it is ploughed off into a "trimmer" which throws the sugar at a high velocity in a stream resembling that from a fire hose.

The port of Hilo, which serves the plantations of the Island of Hawaii, is now being equipped to ship bulk sugar. This installation will be similar in principle to that of Kahului, except that the sugar will be stored in high steel "silos" and will be removed from these tanks by clam-shell buckets suspended from a traveling bridge crane. Each silo will have a central stack or chute down which the sugar will be dropped into conveyor feeding hoppers. Plans are under way for outfitting all Hawaiian sugar shipping ports, including Honolulu, and it is anticipated that within four years all sugar will be similarly handled and shipped.

The unloading equipment installed by the Matson Navigation Company on the wharf of the California and Hawaiian Sugar Refining Co. at Crockett is most impressive in size and in operation.

The unloading cranes are capable of lifting sugar at a maximum rate of 350 tons per hour each, which is somewhat above the average out-turn

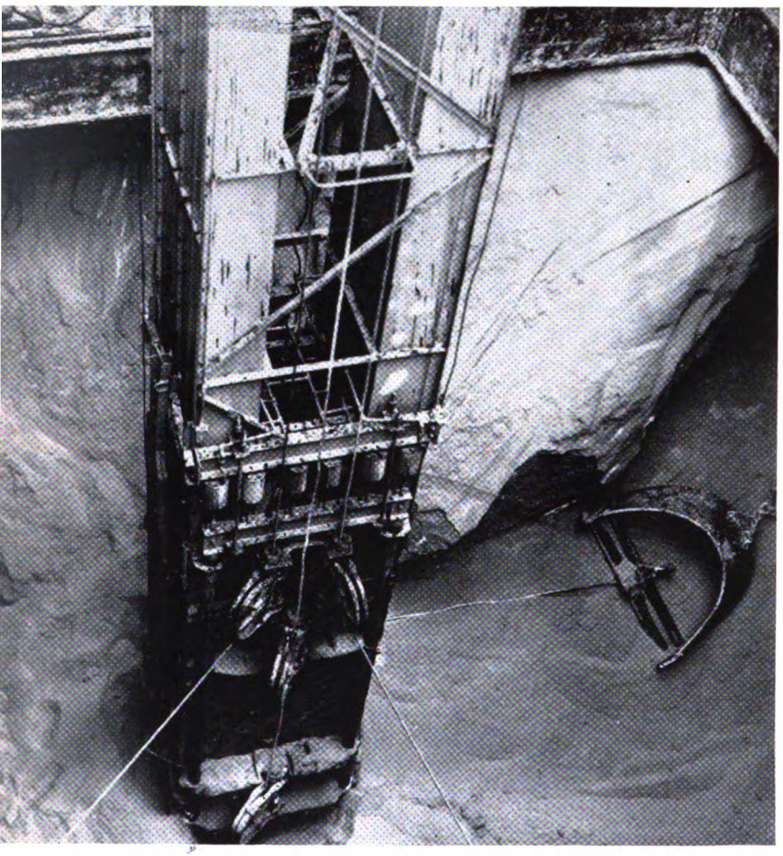
Problem of Sanitation

The matter of sanitation, while not overlooked, is not a critical matter inasmuch as the sugar is made sterile in the process of remelting and refining. The operators who must work in the holds are supplied with specially made canvas boots and coveralls which are kept well laundered. Rigid rules regulate all activities, and smoking is forbidden on the ship.

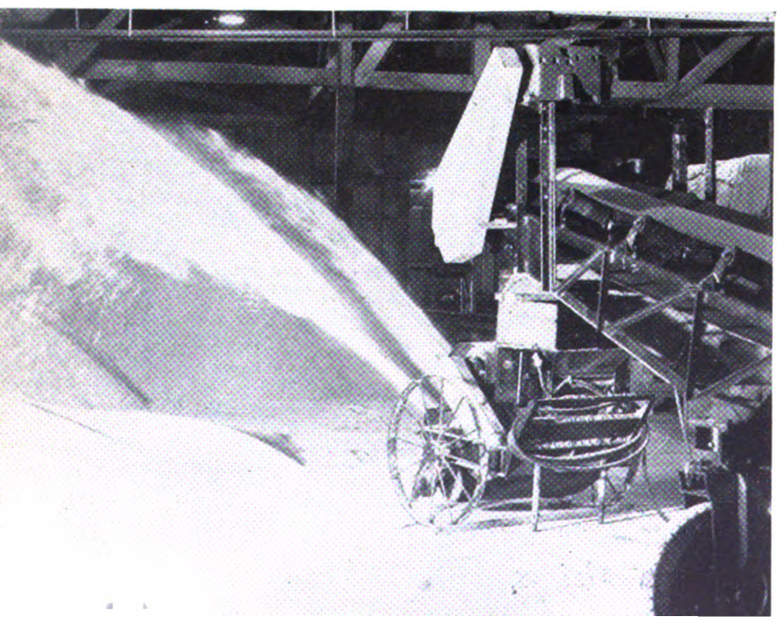
In a weather covered gallery above the warehouse shed of the wharf, a collector conveyor belt receives the sugar from the towers and discharges it into a twin hopper which alternately fills weighing bins. The sugar is weighed and passes on over belts to the refinery melt or to the warehouse floor. Continuous purity samples are taken during this process. That portion to be stored is elevated and dropped into "trimmers" which fill the storehouse to its eaves. Reclaiming is accomplished by portable conveyor equipment. This places it on the same belt which carried it into the warehouse and conveys it to the melt for refining.

New silo type storage tanks are being constructed at Crockett and will be served by an extension of the conveyor systems. The Western Sugar Refinery in San Francisco is being equipped and converted to bulk sugar discharging and storage, and all mainland facilities will be ready for the simultaneous preparations in the Islands.

The provision of adequate storage facilities in the Islands and at the refineries will do more than increase the efficiency of handling and provide a quick turnabout of the vessel. It will level off the seasonal extremes in production and refining. The storing in silos in lieu of bags will relieve congestion in wharf and terminal, making available badly needed space for other cargoes.



THE ELEVATOR is capable of directly excavating all sugar within the square of the hatch. To reclaim the sugar under the deck, two 3-drum electric slusher hoists are installed in the tower cab. Each hoist operates a sugar scraper (seen in lower right of cut). The cables run from the cab through sheaves along the boom and down the elevator shaft. One cable attaches to the front of the scraper to pull it toward the square of the hatch. The other two cables run through snatch blocks attached to the side of the ship and return to the scraper. These two cables provide for back-hauling the scraper. All three cables can be seen attached to the scraper in this cut. On the forward side of the elevator can be seen the blocks guiding the three cables to the other scraper in the hold which is not in the picture.



AUTOMATIC TRIMMER in operation at the California and Hawaiian Sugar Refining Company warehouse at Crockett. This moveable trimmer completes the mechanical process of handling bulk sugar which has literally saved the day for the Hawaiian Islands sugar industry.

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LSM to Tug

(Continued from Page 33)

ed at the Albina outfitting piers. This involved a girder effect and cantilever type of construction for the forward end of the new superstructure as support for that portion during the shortening process. The new section was erected on a scow. Drydocking of the vessel, burning off of the old, and slipping new into place and securing followed. Work at the drydock was completed in four working days.

All electric work was performed by Marine Electric Company, Portland.

Owning 18 covered barges of 600 ton capacity each the Western Transportation

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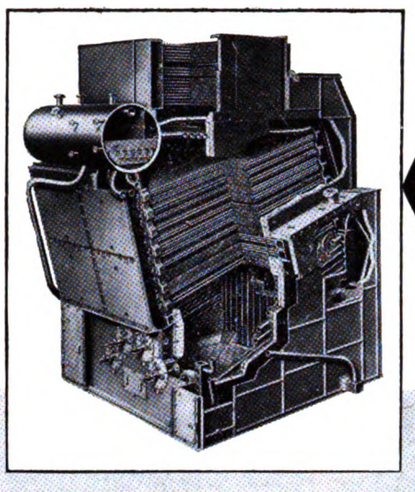

muscle

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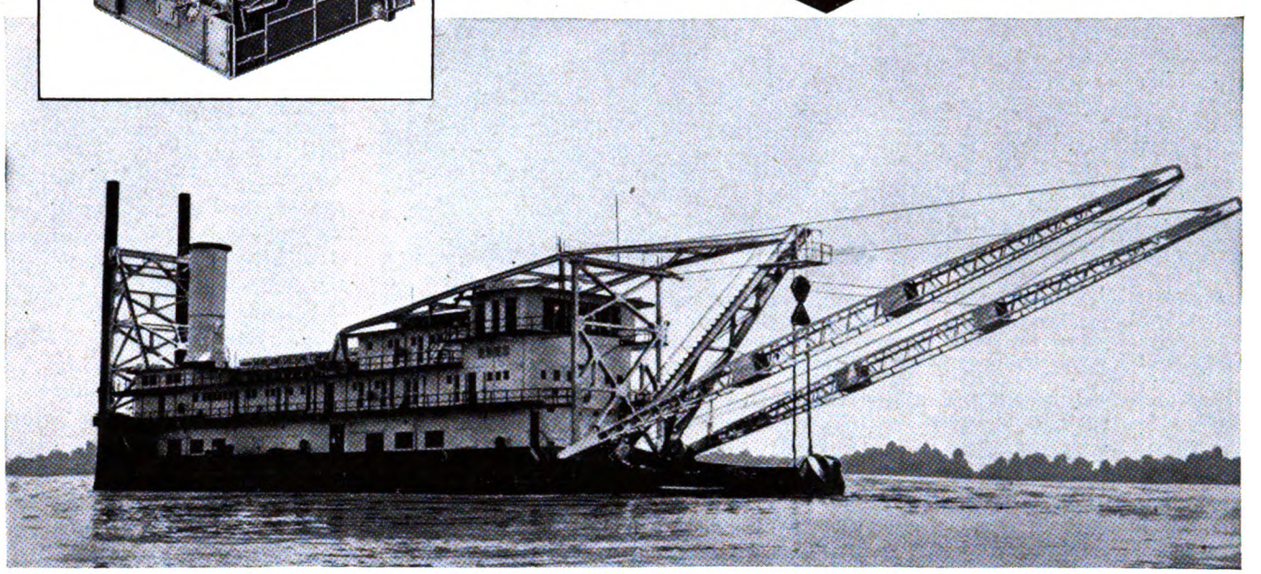
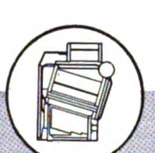


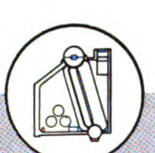
The dredge CHICAGO shown above and her twin sister, the CARRIBBEAN, are the most powerful cutter-head suction dredges ever built. Completed by AVONDOLE MARINE WAYS, INC. of New Orleans, the CHICAGO is now in service of the Argentine Government, while the CARRIBBEAN is the latest addition to McWILLIAMS DREDGING COMPANY'S fleet.

Steam requirements of 85,000 lb. per hour on each of these record-size dredges are supplied by one oil-fired B&W boiler, designed with a liberal reserve capacity for unusual demands. Because of their fuel economy, dependability, and ease of maintenance, these boilers are contributing importantly to the dredge's ability to remain on locations for long periods without necessity of reservicing.

Strongly influencing the selection of B&W boilers for these jobs was the long, satisfactory experience with B&W units on other dredges of the McWILLIAMS' fleet. Supplying the right answer to unusual as well as routine boiler requirements is a 70-year-old story with B&W . . . and why so many operators come to B&W first on future plans.

M-234





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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

"SUBVERSIVE ACTIVITIES" was the subject of the June 16th meeting of The Society of Marine Port Engineers, New York, N.Y., Inc. Speakers were EDWARD P. MORGAN (left) and T. C. KIRKPATRICK (third from left). Mr. Morgan, a former FBI Special Agent, is now an attorney in Washington and Mr. Kirkpatrick also formerly with the FBI is now Managing Editor of "COUNTERATTACK," the well-known anti-Communist newsletter.
Pictured with them (second from the left) is B. C. EDWARDS, President of the Society and General Superintendent of Agwilines, Inc.; and FRED M. ROHRER, Vice President of Grace Line (right).

New York Port Engineers Discuss Subversive Activities

At the June 16th meeting, the last until September 15th, The Society of Marine Port Engineers, New York, N.Y., Inc., heard discussion of subversive activities as they affect the waterfront and the entire country. This was "Guest Night" and some ninety members and guests were present.

The speakers were Edward P. Morgan, former special agent for the FBI and T. C. Kirkpatrick also a former FBI man and now managing editor for "Counterattack," the newsletter exposing Communist activities.

The Communist threat in this country is more serious now than ever, Mr. Morgan said. We make the mistake of considering the Communist Party a political party. It is not a political party but an "extraterritorial arm of the Russian Government, the servant of the Soviet Union, and its sole objective is the destruction of the United States as the last powerful opponent of Russia."

"Stalin has stated that it is inconceivable for the United States and Soviet Russia to exist side by side on this globe."

To emphasize the very real danger Mr. Morgan pointed out that when Russia was taken over by the Reds there was but one Communist to 2,200 Russians while right now in the United States there is one Communist out of 1,800. We must not make the mistake of measuring their strength by numbers, he said.

The greatest error we can make is to get excited over Communism and then relax. The battle must continue unabated or we will be taken over.

Mr. Morgan stated that in his opinion the alternatives to war are these:

1. Revolution in Russia which is not possible because it is a police state. 2. Let Russia have the world. 3. For a long time Russia dare not try to take over a country not first softened up by internal dissension caused by Communists. To avoid a war we must eliminate Communism in the United States and we must be so well prepared militarily that Russia dare not strike.

We must give the rank and file of labor full knowledge of whom the Communists are among their ranks, urged Mr. Morgan. This could be done, he said, by Congressional committees going into every industrial community armed with the facts and asking all union leaders THE question, are they Communists?

In the marine field, said Mr. Morgan, the management men have been inclined to think they can do business with Communists. This is wrong, he said, for you cannot do business with tyranny, you only postpone the showdown until the Communists are strong enough to win and take over.

His talk and the remarks of Mr. Kirkpatrick were enthusiastically received by the audience which included many steamship company executives at whom the statements about doing business with Communists were directed.

B. C. Edwards, president of the Society, announced that during the summer months a program of interesting fall and winter meetings would be outlined.

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Columbia River Port Engineers Stage Refractories Program

Refractories and refractory coatings were discussed at the May meeting of the Society of Port Engineers of the Columbia River Area. Starting with showing of the film titled "A Trip Through the A. P. Green Fire Brick Company Plant" later discussion was led by William T. Kay, chief engineer of E. J. Bartells Company of Portland and Seattle with W. H. Henson, chief sales engineer, Refractories Division, Norton Company, Worcester, Massachusetts, and Harry A. Blackburn, refractories engineer, Norton Company, headquartered at Hollywood, California, participating. Many members commented the session proved to be one of the most instructive yet to be held by the Society.

(Continued on Page 40)

AT THE RIGHT, MEMBERS AND GUESTS attending the June 16th dinner meeting of The Society of Marine Port Engineers New York, N.Y., Inc., included: J. CHILDS, American President Lines; C. J. PIERCE, Maritime Commission; W. A. KIGGINS, Bull Line; CHET ROE, Sea-Ro Packing Co.; T. J. McTAGGART, Standard of New Jersey. L. L. WATTS, and A. J. IVEY, Alcoa; C. W. CLARKE, Waterman; J. J. REAMMIE, Waterman; ROBERT ALBERTS; Mr. HODES of Cosmopolitan; DOUGLAS HILL, Marine Electric; H. L. LINK and R. MORIARITY, Linkmor Service; B. C. EDWARDS, Agwilines; EUGENE FABARES, Cargocaire; HARRY BARDIN, General Electric; W. A. DUNBAR, Robert G. Allen Co.; CHARLES HERRING, Seimund Marine; MR. CARTWRIGHT, Marine Transport Lines; DR. MEADE, U. S. Public Health Service.

F. M. ROHRER, Grace Line; CHARLES WOODALL, MR. IVERSON, A. S. THAELER of Federal Shipbuilding; ROBERT WAGER; J. P. TIERNEY, G. KIRSCHNER, LINN RAKESTRAW, MR. HASSE, of Foster Wheeler; E. P. MORGAN, speaker; T. C. KIRKPATRICK, Managing Editor of COUNTERATTACK; WILLIAM RICHARDS, Dampney Co.; A. C. LANTERI, The Texas Co.; L. HENSHAW, Carlson-Lockett; Captain WM. McGUIRE, U.S. Coast Guard; F. C. GAINES, Tankers Co., PERRY SISSLER, J. FOX, Standard Oil of New Jersey.

J. S. JACKSON, Polarus Steamship; MAX COGHAN, Bernuth-Lembcke; J. STEIN and RALPH BAILEY, Bailey Refrigeration; JOHN YATES, Hellenic Lines; Capt. T. W. RANDALL; R. E. CLARK and AL PORTER, Agwilines; T. A. McQUILLING, Pan American Petroleum; J. J. NELIS, Foster Wheeler; COLIN BRANFORD of San Francisco; E. C. HENCKE, American Trading & Production; TOM McGRILLES, States Marine; J. ALBERG, Chilean Line.

WILLARD JONES, Gulf Oil; R. C. HARTMANN, IVAN EBY and MR. GLENNON, Moore-McCormack; MR. LOVELADY, Alcoa; BEN LOCKETT, Carlson-Lockett; J. MURPHY, Energy Control; DON LAING and MR. SERVICE, Bethlehem Steel; C. A. WESTBROOK, Socony-Vacuum; MR. ANDRES, Foster Wheeler; HENRY MIKKELSEN and G. W. E. MIKKELSEN, Oil Tank Cleaning Co.; A. DeROBBIO, Commercial Products; TED LANE and PAT DILLON, National Air Conditioning; MR. HAYES, Trinidad Corp.; MR. SAMUEL, Robin Line; WILLIAM NICHOLS, Doyle & Roth.

L. B. PATE and JIM MULCAHY, Robin Line; HAROLD PELLOT; W. YULE; VAL SAVAGE, Gamlen Chemical; J. LATHBURY, Oil Tank Cleaning Co.

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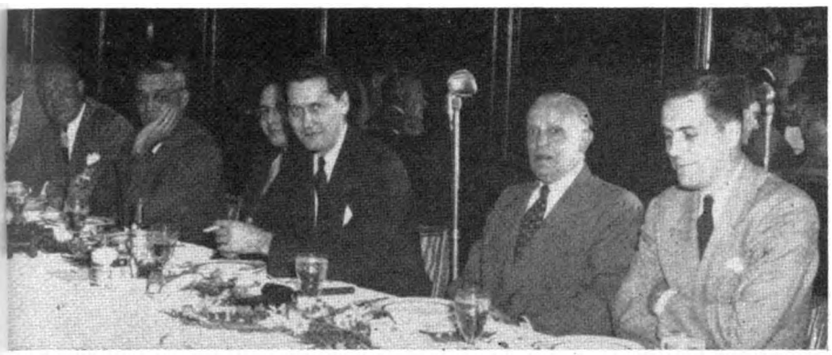
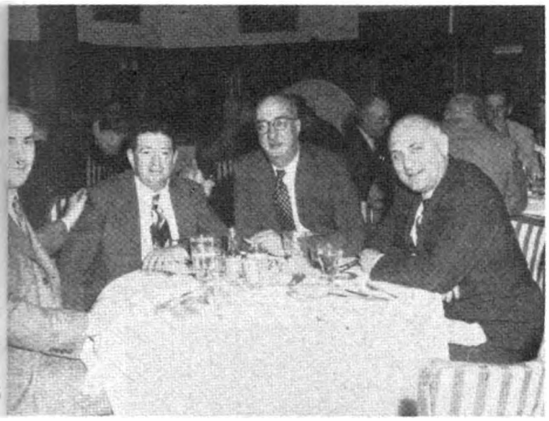
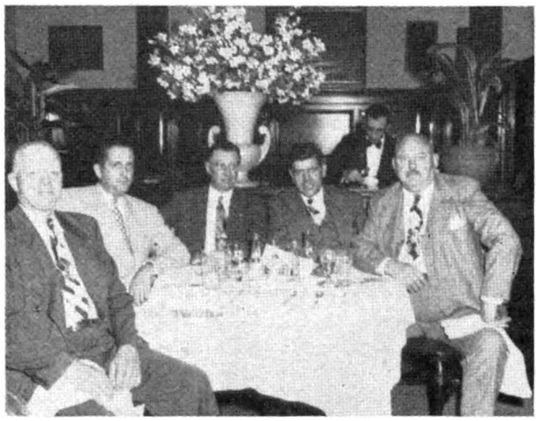
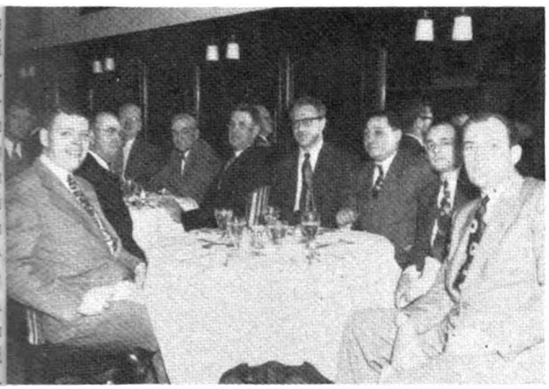
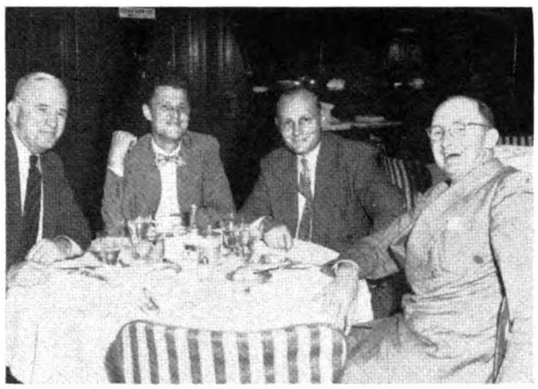
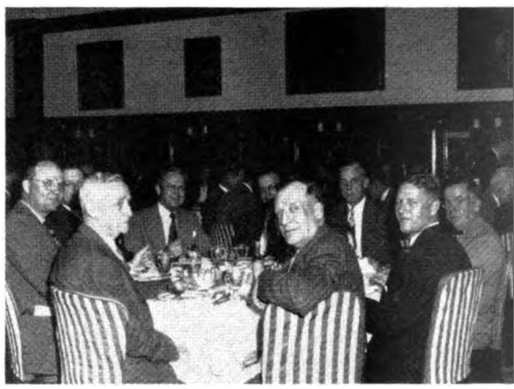
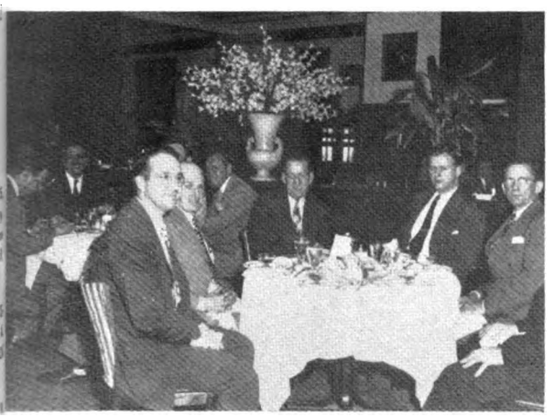
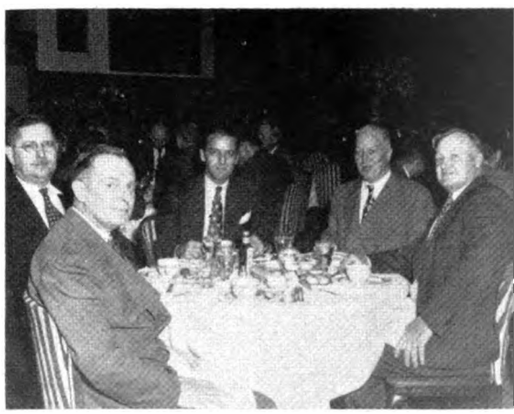
NEW YORK PORT ENGINEERS AND GUESTS





The meeting concluded with a business session at which it was announced meetings would be recessed in July and August, and starting with September, meeting dates would be the second Thursday of each month. Officers for the 1948-1949 year were elected. James E. Saviski, M. & R. Division, U. S. Maritime Commission was elected president; Kenneth Webb, principal surveyor, Board of Marine Underwriters of San Francisco, vice-president; Stanley Watt, assistant port engineer, Matson Line, secretary-treasurer. Elected to the board of governors are Don Bartosch, Combustion Engineering Company; George Larsen, General Petroleum Corporation; Joe Long, American Bureau of Shipping; Harvey Martell, The Texas Company; Walter A. Nagely, Boiler Engineering Service and Supply Company; and Jack Waters, Pope and Talbot, Inc.

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Nordberg Engines Discussed At Seattle Engineer Meeting

George H. Lienhard, of San Francisco, sales and service engineer, Heavy Machinery Division, Nordberg Manufacturing Company, with the use of educational pictures and especially compiled data supplied members and guests of the Society of Port Engineers of Puget Sound with an illuminating and interesting discussion on diesel engine operation at their May meeting.

He brought them up to date on the improvements in air compressors, scavenging blowers, cylinder heads, bearings and other parts developed and being developed in modern diesels. He discussed freely the problems of lubricating oil consumption and causes of explosion and, in view of fast rising costs of fuel oil, caused his audience to consider economies of diesel propulsion in an analytic comparison of two Victory vessels operating on comparative voyages, one diesel propelled, the other steam propelled. A barrage of questions followed Lienhard's remarks.

THE SOCIETIES OF PORT ENGINEERS . . . Top row, left to right: PUGET SOUND—K. W. MacDONALD, Surveyor, Seattle Port of Embarkation, new member of the Society. Seattle representatives, Nordberg Manufacturing Company—CARL HARRIS, FOREST BRENDER, service engineers; CLIFFE MATHERS, president, all of Cliffe Mathers Company, Nordberg distributors at Seattle. COLUMBIA RIVER PORT ENGINEERS—WILLIAM T. KAY, Chief Engineer, E. J. Bartells Company; WALTER A. NAGELY, 1947-1948 President; STANLEY E. WATT, Secretary-Treasurer; JAMES E. SAVISKI, incoming President of the Society.

Center row, left to right: More Columbia River Engineers—CARL VOM CLIEFF, Northwest Marine Iron Works; W. H. HENSON, Norton Company, Worcester, Massachusetts; HARRY A. BLACKBURN, Norton Company, Hollywood, California; E. MATTHEWS, States Steamship Co.; AL QUINE, Consolidated Builders, Inc.; JOE EDERER, Coastwise Line.

Bottom row, left to right: SAN FRANCISCO—JIM STASEK, Assistant Port Engineer, Pacific Far East Line; GEORGE EGGERS, San Francisco representative for Bardahl Lubricants; JIM FLAHERTY, new sales representative in the marine and export department for Quaker Pacific Rubber Company and formerly an engineer officer with Pacific Far East Line; PRESTON D. WEEKLEY, engineering representative of Waterman Steamship Company, and WARD GRISHAM, San Francisco, distributor for Bardahl who explained the properties of his product at the meeting; ELMER M. SCHWEITZER, new Assistant Port Engineer at San Francisco for the States Steamship Company; JOHN F. KOOISTRA, San Francisco, Carrier Corporation, whose talk before the San Francisco Society of Port Engineers was titled "The Cycle of Refrigeration and Service Problems of Marine Refrigeration."

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OPERATING IDEAS

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TONS AND TONNAGE

By ***EDWARD V. LEWIS***
Naval Architect
George G. Sharp

Although figures for tons and tonnage as applied to ships are in constant use by operators, the exact meaning of a particular figure is sometimes in doubt. Accordingly, it may not be amiss to review the meaning of the various types of tons and discuss those which have not been dealt with in previous articles. See the accompanying table for comparative figures.

Tons Involving Weight

The displacement of a ship is expressed in tons of 2240 lbs. It represents in any condition the total weight of the ship, its cargo, fuel, stores and everything else on board. Since it is also equal to the weight of water displaced by the ship, it may be determined at any draft by dividing the calculated volume of the underwater body by the density of the water (35 cu. ft. per ton, in the case of salt water). For convenience, curves of displacement at various drafts are included in the usual Hydrostatic Curves or Curves of Form for both fresh water and salt water, and the information is usually also given on the capacity plan in the form of a scale.

If a single figure for displacement is given, the full load displacement is usually intended, i.e. the displacement at the summer load line (and in salt water, if an oceangoing vessel.)

The deadweight tonnage is the weight carrying capacity of the vessel, likewise expressed in tons of 2240 lbs. As discussed in an earlier article it is obtained by subtracting the light ship weight from the displacement at full load draft.

Cargo Tons

The tons on which freight rates are based may be units of either weight or volume, depending on the density of the cargo. All cargo heavier than 40 cu. ft. per ton is rated for this purpose on the basis of its weight in tons of 2240 lbs. The maximum amount of such heavy cargo which a ship can carry is the cargo deadweight, i.e. the total deadweight with fuel, stores, passengers and crew deducted.

On the other hand, if cargo is lighter than 40 cu. ft. per ton, freight rates are generally based on a "payable ton" of 40 cu. ft. The maximum cargo capacity of a ship on this basis may be obtained by dividing the total capacity in bale cu. ft. by 40, and making an appropriate deduction—say 10%, depending on the ship and the type of cargo—for broken stowage.

Measurement Tons

Measurement tons or tonnage refer to interior volumes of the ship calculated in accordance with definite rules. The ton which is here used as a unit is a "register ton" of 100 cu. ft.

The rules on which the measurement of an American ship is based are given in a publication entitled "Measurement of Vessels," issued by the Bureau of Customs of the Treasury Department. An examination of this book will show that a single vessel may have a number of different tonnages, including gross and net tonnages by United States rules, by Panama Canal rules and by Suez Canal rules. Furthermore, if the ship is engaged in trade with a country which does not have an agreement with the United States for reciprocal acceptance of national tonnages, additional figures will be obtained after the ship has been measured in that foreign country.

United States Tonnage

Considering first the gross tonnage by United States rules, it is essentially the volume in cu. ft. of the vessel below the tonnage deck divided by 100, to which is added the tonnage of superstructures, "excess hatchways," etc. However, certain spaces are *exempted* from inclusion in gross tonnage, the principal items being as follows: double bottoms, peak tanks used only for ballast, shelter deck spaces, and above the upper deck, open superstructures, companions, galleys, wheelhouse, public toilet spaces, etc. Also passenger spaces which are "entirely above the first deck which is not a complete deck to the hull" are exempted.

United States net tonnage is obtained by *deducting* the following major items from the gross tonnage: propelling machinery space, crew spaces, hospital and navigation spaces other than the wheelhouse but including boatswain's stores, anchor gear, steering gear, etc.

Although these tonnage values are worked out by the admeasurer in accordance with definite rules, in the design of a ship there are a number of factors which can be taken into account affecting the magnitude of the tonnage. In fact, certain modifications to a completed vessel may either intentionally or unintentionally increase or decrease the tonnage.

Shelter Deck

One of the most important considerations in the design of a ship affecting tonnage is whether or not the ship is to be a full scantling or a shelter deck type. The former is designed for the deepest draft permitted by the freeboard rules, with the weather deck as the freeboard deck. For the same depth of ship, however, a shelter deck vessel will have lighter scantlings and less permissible draft. This results from the fact that the second deck (the deck below the uppermost continuous deck) is the deck from which freeboard is measured. The tonnage hatch, tonnage well, tonnage openings in 'tween deck bulkheads, and freeing ports or scuppers, are all provided under the theory that the second deck is really a deck exposed to the weather, however indirectly.

All shipping men are familiar with the rather absurd situation resulting from the elaborate provision of openings required by the tonnage rules and the careful means also provided for closing those same openings so that they will be effectively weathertight and so that the requirements of the load line rules will be met. Revisions to the measurement rules have even gone so far as to permit the use in the tonnage well of scuppers which can be closed and kept closed indefinitely in place of the freeing ports which were originally required. A new approach to the problem of establishing the basis for assessing dues and tolls would be most welcome.

It may be of interest to note that a shelter deck vessel cannot be converted to a full scantling type without major structural modifications. However, a full scantling vessel may be converted to a shelter decker with very little difficulty, provided that a reduction in draft is acceptable.

A simple means of reducing the tonnage of a Victory ship may be of interest to operators of this type vessel. If the forecastle is made "open" by means of the appropriate tonnage openings and a 9 inch hatch coaming is provided within it to comply with the loadline rules, an additional exemption of several hundred tons may be obtained.

Other Factors Affecting Tonnage

A part of the rules which is particularly important in passenger vessels is that which provides that passenger spaces above the first deck which is not a complete deck to the hull may be exempted. This means that stopping the uppermost

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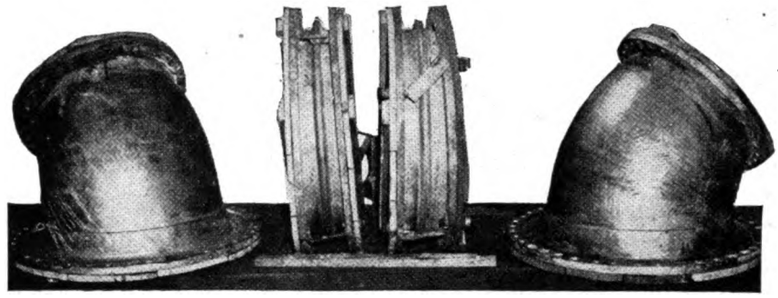


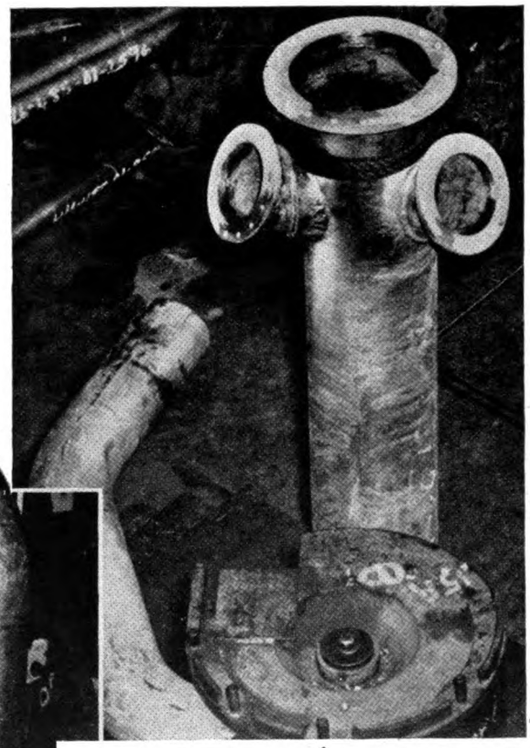
First aid to craftsmanship in Camden shops of "New York Ship"

THESE examples of coppersmithing at Camden, N. J. shops of the New York Shipbuilding Corporation, are dramatic reminders of the twin properties of ready workability and corrosion resistance that make the red metal indispensable to marine construction.

Here is workability that means easy bending, flaring or tapering. Soldered or brazed joints are strong, easily and quickly made. Added to high corrosion resistance is the fact that copper, when used for salt water lines, remains free from barnacles. 48139

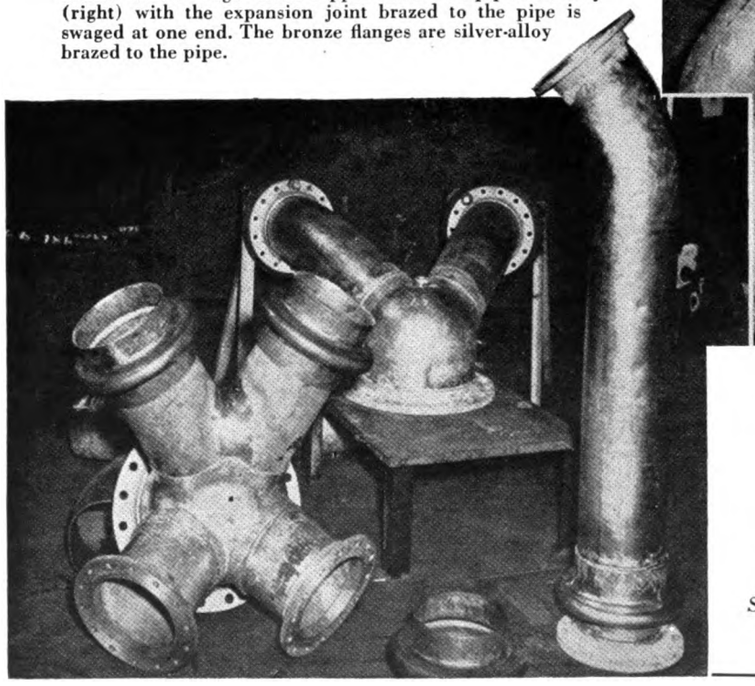
Above:
Units shown here are for sea water lines. The reducing elbows are 33" x 26", hand-wrought from ¼" copper and brazed together to form the shell. The ends are flanged and riveted to steel rings. The expansion joints in the center of the photo are fabricated in the same manner as the elbows.

Below:
This assembly will convey boiler feed water at 250°F. Main section (standing) is 14" pipe section, hand-wrought from sheet copper .120" thick with a brazed seam. End flanges are also brazed to the pipe. Branch fittings are fabricated from 8" seamless drawn copper tube, brazed to the 14" pipe. Branch end flanges are silver-alloy brazed.



Below:
In the 14" pipe assembly in the left foreground, the spherical dome is hand-wrought from a single piece of heavy sheet copper. The four hand-wrought 8" pipe branches and large flange are brazed to the dome, as are the two hand-wrought expansion joints. The two branch flanges are silver-alloy brazed.

The pipe assembly with two branches is fabricated in the same manner, except that the branches are formed from 8" seamless tube. The expansion joint in the foreground (center) is also hand-wrought from copper tube. The pipe assembly (right) with the expansion joint brazed to the pipe is swaged at one end. The bronze flanges are silver-alloy brazed to the pipe.



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COMPARATIVE TABLE OF TONNAGES FOR TYPICAL VESSELS

	C3 Shelter Dk.	C2 Shelter Dk.	C2 Full Scant.	C1-A Shelter Dk.	C1-B Full Scant.	C1-M-AV1 Full Scant.
Weight Basis						
Full Load Draft	28'-6"					
Displacement Tons	18,215		15,000	11,050	12,875	8370
Deadweight Tons	12,900		10,500	7230	9140	5900
Measurement Basis						
U.S. Gross Tons	7920	6200	8230	5150	6800	3800
U.S. Net Tons	4650	3500	4840	2835	3960	2160
Panama Gross Tons	10,800		8380			
Panama Net Tons	7700		5770			
Suez Gross Tons	10,800		8380			
Suez Net Tons	7900		6300			
Cargo Capacity						
Cargo Deadweight Tons, Approx.						
Bale Cubic Feet	720,000		542,000	440,000	440,000	237,000
Payable Tons (40 cu. ft. minus 10% for broken stowage)	16,200		12,200	9900	9900	5330

deck short of the stern or the fitting of a tonnage well may cause an appreciable reduction in the gross tonnage.

Whenever possible peak tanks should be piped for salt water ballast only, so that they may be exempted.

An important deduction from the gross tonnage to obtain net is the deduction for "propelling power." The rules are set up in such a way that for modern cargo ships the greatest deduction results when the machinery space tonnage is over 13% of the gross tonnage. Usually this means that all or part of the "light and air" spaces should be included in the machinery space volume, and sometimes larger settling tanks, larger casings or even a slightly longer engine room may be necessary to reach the requisite 13%.

Other Tonnage Rules

Other tonnage rules will not be discussed here, but special consideration must be given to them if the ship is to operate through the Panama or Suez Canals, for example. The accompanying table shows a comparison between the tonnages from different rules.

An important point in regard to both the Suez and Panama Canal rules is that the shelter deck spaces are only exempted locally, the bulk of the shelter deck spaces being included in the gross tonnage.

An interesting feature of the Suez Canal rules is that if the ship should at any time transit the canal with passengers, cargo or stores in any portion of an exempted or deducted space, the whole of that space will be permanently added to the net tonnage.

Both canal rules have special provisions for determining the tonnage of a loaded vessel, the results being somewhat different from those obtained by ordinary measurement.

Reference should be made to the booklet "Measurement of Vessels" for further details on United States, Suez or Panama Canal tonnage.

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How To Get The Best From Your Condensed Air Ejectors

By ROBERT P. GIBLON
Marine Engineer
George G. Sharp

To enable the various pieces of condensing apparatus to function properly on steam propelled vessels, it is necessary to provide a system for removing air and other non-condensable gases from the condensing units. The method used generally makes use of either reciprocating air pumps or on the more modern vessels of steam actuated air ejectors.

The following discussion will be confined to modern steam turbine driven vessels employing a vacuum of around 28.5 inches of mercury since the maintaining of proper vacuum is most important on these vessels. Some of the comments, however, will also apply to other steam vessels using lower condenser vacuum. To remove the air in the condensers one or more two stage air ejectors are generally installed. A typical installation is to mount two primary and two secondary ejectors on a feed water cooled shell and tube heat exchanger containing both an inter and after condenser. Suitable valves are fitted so the various ejectors may be isolated from the system and from the inter condenser to permit repairs to be conducted on any one ejector without requiring a complete shutdown of the unit. The types and arrangement of air ejectors are rather numerous. For example some designs use twin two stage ejectors mounted on a shell containing twin inter condensers and a common after condenser while other designs have an after condenser mounted separate from the inter condensers. In all designs, however, the first stage ejector draws air and non-condensable gases that are saturated with moisture from the main and/or auxiliary condensers via a large ejector vapor line and compresses the mixture to an intermediate pressure between vacuum and atmospheric and discharges the resulting mixture to the inter condenser. The inter condenser condenses the motive steam and other condensable vapors and the remaining moisture saturated air and gases are further compressed by a second stage ejector to atmospheric pressure and delivered to the after condenser. The second stage motive steam and other condensable vapors are condensed in the after condenser leaving only the air, non-condensable gases, and vapor to saturate which are discharged to atmosphere.

Operation Varies With Design

The method of starting up, operating and securing the different design of ejectors varies from one design to the other and the various operations required are generally understood by the operating engineer. There are, however, a few operating difficulties that are sometimes overlooked by some operating engineers and one of the most common of these is that of excessive air leaking into the condenser. A very small leakage of air into the condenser or anywhere in the system, produces a considerable reduction in vacuum. It also reduces the heat transfer rate by blanketing the tubes with air, and tends to overload the air ejector. Every effort should be made to detect and eliminate air leaks. Suspected places should be gone over with a candle flame while the system is under vacuum, or the system may be placed under about 5 psig of air pressure and soapsuds applied to the suspected spots. Aside from leaks through defective materials such as porous castings, particular attention should be directed to detection of small leaks at valve stems, gauge glasses, and flanged joints both around the periphery and around the flange nuts. After the first several periods of operation of a new vessel all gasketed joints should be gone over and tightened. In addition periodic tests should be made of the entire system that is under vacuum. Temporary expedients, such as the application of shellac, should be applied as soon as possible after discovery of any leak. To reduce leakage to a minimum around valve stems that are subject to vacuum, all valves should be either wide open so that the valve stem seal will seat tight against the gland and thus prevent air leakage, or the valve should be closed tight.

Determining Air-tightness

A positive steam pressure should be maintained on all main and auxiliary turbine glands that are subject to vacuum in order to prevent air leakage. All low pressure feed heaters and evaporators that are vented to the condensers should also be checked for leaks along with all feed drain, makeup and vent piping that is subject to vacuum.

To determine when a system is air tight without checking the entire system as described above is rather difficult. Some determination of the extent of air leakage can be made by observing and feeling with the hand the amount of air discharged from the after condenser vent. This is possible since all air leaving the

(Continued on Page 47)

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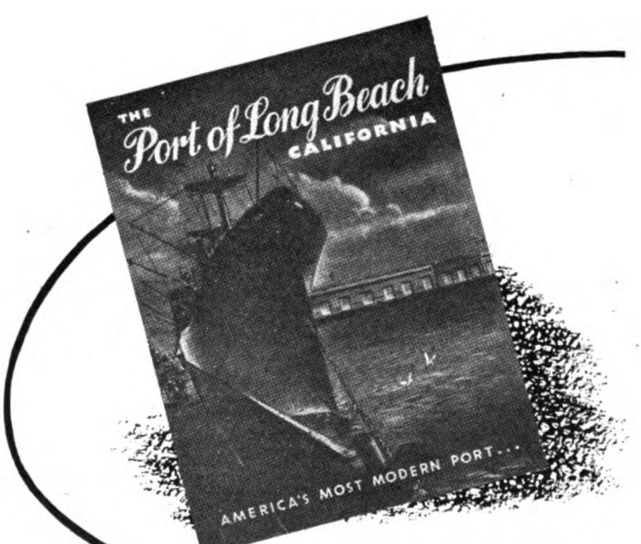

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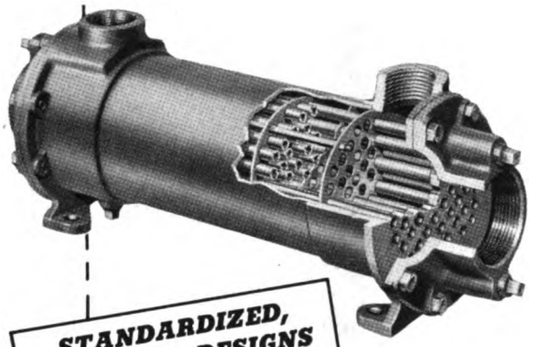

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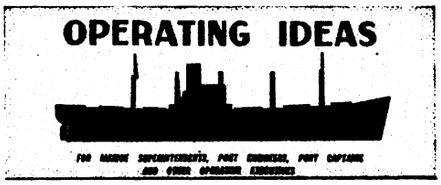

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vent must enter the system that is under vacuum. A system can generally be considered tight if the air flowing from the vent is small compared to the amount ejected from the vent when raising vacuum while the condenser vacuum is within one inch or less of the final vacuum. On some vessels where the after condenser is used to handle air from other sources than the main and auxiliary condensers this method of determining leakage is of little value.

Excessive air leakage can also be determined to some extent by a loss in condenser vacuum where compared to previous conditions where similar sea water flow and temperature and steam flow conditions prevailed. Not all losses in vacuum mean air leakages, however, for reduced vacuum may also indicate plugged or dirty condenser tubes, an improperly functioning ejector due to foreign matter in the ejector nozzles, worn nozzles, low ejector steam pressure, wet steam, a deficiency in inter condenser cooling water or other difficulties.

Air Leakage

On vessels that are fitted with accurately reading and properly located thermo vacuum gauges on the condenser shells and also have a thermometer located in the air ejector suction line an approximate determination can be again made of air leakage by determining the difference between the condenser temperature as indicated on the thermo-vacuum gauge and the temperature in the air ejector suction line. For example on U.S. Maritime Commission Victory type cargo vessels which have condensers that are designed for 28.5 inches of mercury vacuum for normal power conditions with a sea water temperature of 75 deg. F. the temperature in the suction line should be approximately 7.5 deg. F below the temperature indicated by the thermo-vacuum gauge. This difference in temperature is obtained by an air cooler section installed in the condenser where the air and non-condensable vapors are cooled and the vapor content is reduced before the air vapor mixture leaves the condenser. If the difference is less than 7.5 deg. F it indicates excessive vapor carryover which can be caused by excessive air leaks. Although the 7.5 deg. F temperature is applicable to one particular design of vessel it is in general applicable to all vessels where the designed vacuum at normal powers is near 28.5 inches of mercury. This method of determining air leakage must be used with some reserve since dirty or plugged tubes in the air cooler section of the condenser can also cause a lowering of the temperature differential. Also the thermometer in the air ejector suction line, dependent upon its location and design, is sometimes influenced by the engine room ambient temperature resulting in faulty temperature readings.

In general, excessive air leaks to the condenser result in the following to the operator.

1. Higher oxygen content in the feed water resulting in increased corrosion in the feed system and boilers particularly in the boiler economizers, and thus higher maintenance costs.
2. Complete loss of vacuum when maneuvering the vessel since air leakages increase when maneuvering due to three or four turbine glands being under vacuum such as would occur when going astern or when operating at low powers ahead respectively. It is while going astern that it is desirable to have high vacuum so as to reduce the heating effect of the ahead elements.
3. Lower condenser vacuum with resulting increased fuel consumption.

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(Continued from Page 36)

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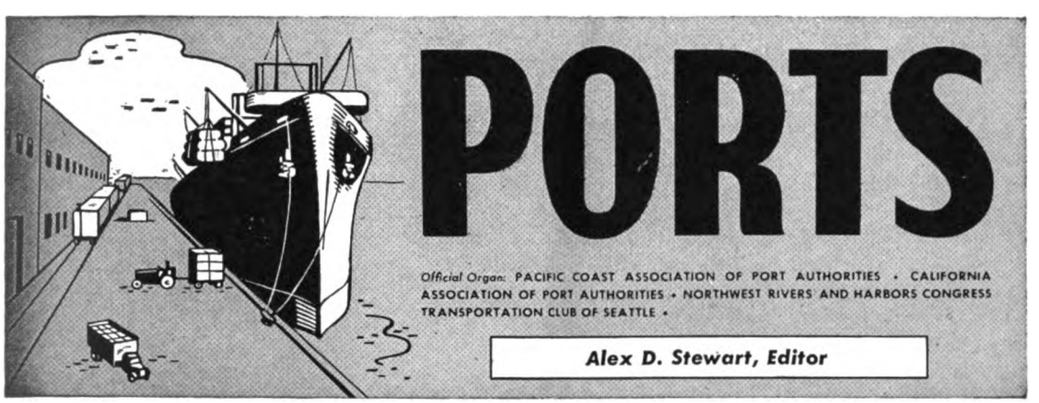

PORTS

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Alex D. Stewart, Editor

R. L. Albin Heads Northwest Marine Terminal Association

At the annual election of the Northwest Marine Terminal Association held at Portland in June trustees were elected consisting of the following: R. L. Albin, Ames Terminal, Seattle; H. H. Wrightson, Columbia Basin Terminals, Portland; W. D. Lamport, Port of Seattle; George D. LaRoche, Commission of Public Docks, Portland; George W. Osgood, Port of Tacoma; Sam B. Stocking, Shaffer Terminals, Tacoma; H. F. Isler, Port of Bellingham; M. M. Stewart, Olympic Steamship Company, Seattle; James R. Bowler, Port of Astoria; C. E. Collins, Pope and Talbot, Inc., Portland; Frank G. Pender, Port of Vancouver, Washington.

Following their election the trustees met to elect Albin, president; Wrightson, vice-president; and Lamport, secretary. Edwin A. Stone, Seattle, was reappointed executive secretary.

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Foreign Trade Zone No. 3 Exceeds Traffic Expectations

Uncle Sam's Foreign Trade Zone No. 3, located at Pier 45, San Francisco, was opened officially June 10th and got off to a start which exceeded expectations.

The Zone is administered by the California State Board of Harbor Commissioners, grantee of a license from the Foreign Trade Zone Board at Washington, D. C. Operating the Zone is West Coast Terminals, Inc., San Francisco, which does the stevedoring, car unloading and general terminal work.

Acting superintendent at the Zone's start was Phillip E. Linnekin, who was a wartime captain in the United States Army Transportation Corps at the Los Angeles Port of Embarkation. Captain Linnekin, however, left that position on July 15th to become an assistant to Colonel John Kilpatrick, operating manager of the American President Lines, his superior in the armed forces.

A civil service examination for the superintendency was held July 6 and the position will be filled from the list of those passing this test. Until the permanent appointment, the Zone will be directed by Robert Hunter, traffic manager of the Harbor Board. James O'Leary is superintendent there for West Coast Terminals.

From the opening date, June 10, until July 7, the Zone received 950 tons of duty-free shipments and had firm bookings for 150 tons of Chinese rugs and 1,600 measurement tons of 300,000 Japanese bamboo rakes due before the end of July. It is said the shipment of Chinese rugs, (600 bales), is the largest consignment of its kind received at any American port.

Superintendent Linnekin declared it was expected the San Francisco Zone in less than two months would exceed the 1,200 tons received by Foreign Trade Zone No. 2 at New Orleans in the first three months following its opening May 1st last year. Foreign Trade Zone No. 1, New York, handled approximately 10,000 tons in its first year of operation when it was established in 1936, said Mr. Linnekin.

The San Francisco Zone was opened with an appropriate program at Pier 45 with talks by General R. H. Wylie, manager of the Port of San Francisco; Thomas Coakley, president of the Board of Harbor Commissioners, and Peal Leake, collector of customs. A ribbon across the entrance to the pier shed was cut by Mr. Coakley to permit the entrance of the Zone's first receipts, consisting of a truckload of scrap metal enroute from the Philippines to Great Britain. At the same time a switch engine spotted a box car at the Zone's platform for unloading of cases of rum from the West Indies bound for the American forces out in the Pacific.

The Board of Harbor Commissioners and the San Francisco Chamber of Commerce have launched an extensive promotion campaign to make the Zone's facilities known throughout the world.

R. L. ALBIN, Ames Terminal, Seattle, newly-elected President of Northwest Marine Terminal Association.

President Signs Bill to Deepen Houston Channel

President Truman signed a bill recently authorizing the deepening of the Houston Ship Channel from 34 to 36 feet, a step forward in the Port's drive for new business and world trade leadership.

This will allow the largest ocean going ships afloat to navigate the waterway. Another plan to widen the channel by 100 feet or a distance of 25 miles, is to go under construction this month. An initial appropriation of $500,000 for this job has been approved by Congress, while funds for deepening the channel are expected to be granted during the next fiscal year.

Both projects are designed to assure safer navigation and to reduce traveling time from deep sea to the Turning Basin.

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J. F. McGarity Named Manager Of Portland Dock Commission

The Commission of Public Docks, Portland, Oregon, announces the appointment of Captain J. F. McGarity, port director, as general manager of the Commission effective July 1, 1948. The office of the port director, formerly operated under jurisdiction of the Port Traffic Development Committee, a civic group, is consolidated with the Commission of Public Docks as of that date.

McGarity succeeds George D. LaRoche in the Public Dock Commission position. LaRoche moves to general legal consultant for the Commission. Following a lengthy traffic and ship operation experience on the Great Lakes, Captain McGarity served as port director at Portland and elsewhere for the office of defense transportation during the war. He has functioned as port director for the Portland Port Traffic Committee for the past two years.

J. F. McGARITY, new Manager of the Commission of Public Docks, Portland, Oregon.

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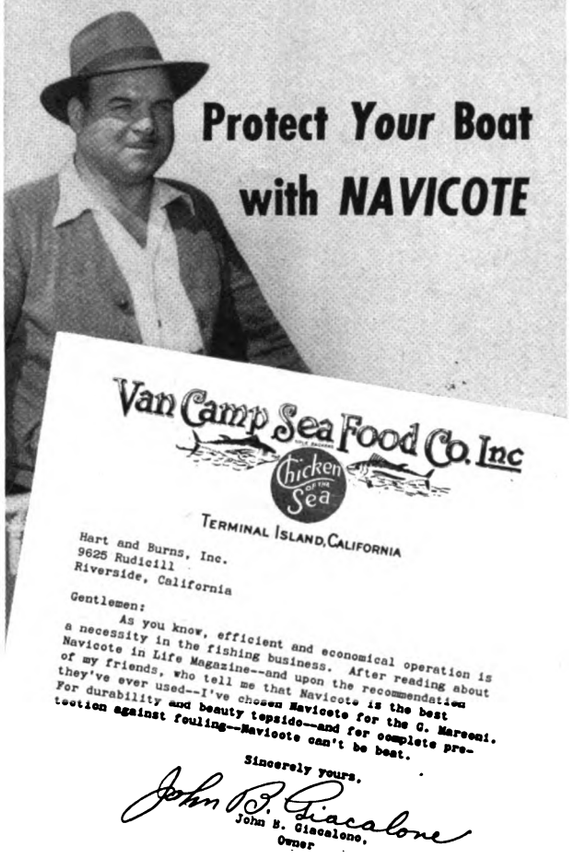

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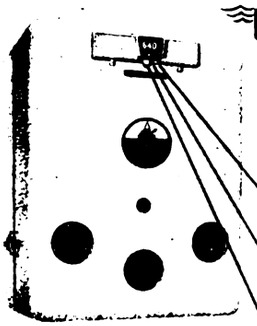

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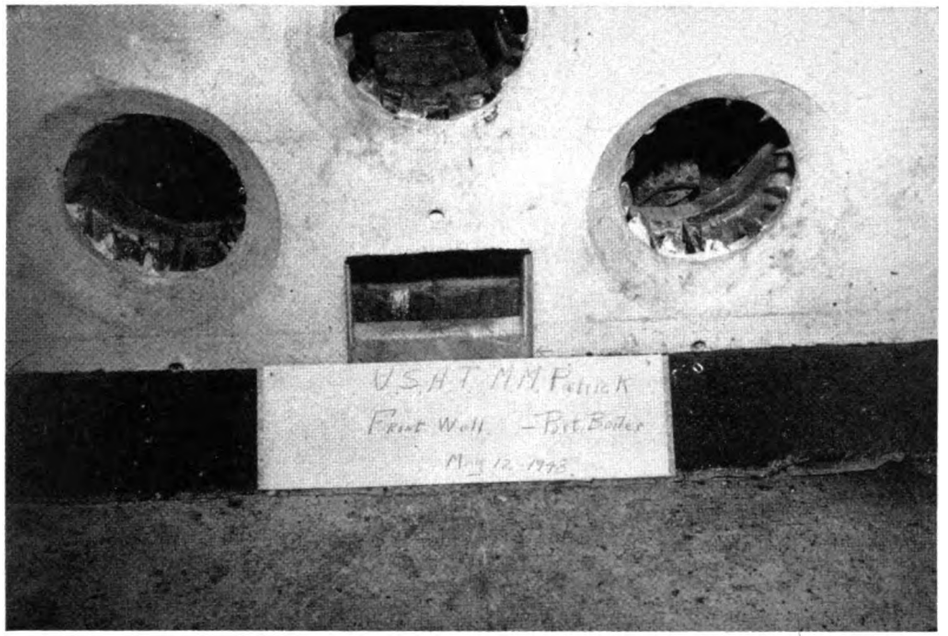

BABCOCK & WILCOX new castable Kaocast on the front wall of the furnace of the port boiler of the United States Army Transport GENERAL M. M. PATRICK. The black strip is plastic chrome ore, the rest Kaocast.

CAST FURNACE LINING ON ARMY TRANSPORT

New Babcock & Wilcox KAOCAST used on U.S.A.T. GENERAL M. M. PATRICK

By WALTER B. HILL
Manager, Marine Sales & Service
C. C. Moore & Company, Engineers

An interesting application of two new materials was recently made on the port boiler of the United States Army Transport GENERAL M. M. PATRICK, a United States Maritime Commission designed C-4.

Instead of using brick to line the non-water contact sections of the furnace a new castable material called Kaocast, developed by the Babcock & Wilcox Company Refractory Division, was used. It has a 3000°F. use limit and, under laboratory tests, this material has proved to be more refractory than superior grades of firebrick.

In these tests, the Kaocast panel was heated for twenty-four hours at 3000°F and then held at 2900°F for the next twenty-four hours. The tests showed zero reheat shrinkage. After this, the panel was heated to 2650°F and cooled with an air blast for ten complete cycles. The panel showed zero loss from spalling. Shrinkage is negligible.

On the PATRICK the Kaocast was first mixed with water and poured into forms. Water-proof paper was placed between the Kaocast and the insulating firebrick which backed it up, so that the insulating firebrick would not absorb water from the Kaocast.

The pictures attached show the Kaocast in place in the floor, side and front walls.

The casing was protected by a second material called Thur-Ma-Lox No. 7. Manufactured by The Dampney Company of America, this high-temperature coating will withstand the high heat during operation and serve a second purpose of protecting the surface when the boiler is out of service and during outages when water is used for washing down the boilers.

This Kaocast installation cost slightly more than brick, inasmuch as it was the brickwork contractor's first job of this kind with Kaocast. After finishing the installation, the brickwork contractor remarked it was his opinion that the Kaocast would be cheaper to install than brick after they had had some experience with it. If the Kaocast gives the longer service life expected, the result will be substantially less refractory maintenance costs. One big advantage is that when repairs are required, it will be unnecessary to replace a complete section. The damaged part can be easily repaired by patching.

The installation aboard the GENERAL M. M. PATRICK was done by J. T. Thorpe & Son, Inc., San Francisco firebrick contractors at The Pacific Ship Repair, Inc. plant at Pier 27, San Francisco.

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Our Long Range Program— How It Died At Birth

(Continued from Page 26)

one to blame for this necessity except the industry itself.

The bills and the ideas behind them were basically good. They would have stood up under any fire the unions could have brought to bear from the heavy guns they wield in an election year. If the long-range legislative program requested by Senator White last year had been evolved four months or even three months earlier there would have been no necessity for trying to ram important changes in the law of the land down the throats of Congressmen. As it turned out it could not be done. Nor could the unions have so successfully and adroitly made them look foolish.

The Blitz: An Inside Coup?

As for the CIO blitz; this had the earmarks of an inside coup for the far-left underlings* of the powerful maritime unions. The obvious strategy of waiting until the very last days of Congress when any opposition would mean defeat; the loud cry of "raiding the Treasury;" the confusion and lack of comprehension on the part of the responsible union leaders; the union locals fighting *for* passage of the bills while the CIO Maritime Committee *opposed* them; these facts all point a suspicious finger at those forces within the unions which would sacrifice anything and everything to gain their idealized goal of nationalization.

To Senator White, who has devoted a long and arduous career to a better Merchant Marine, and to the Members of the Eightieth Congress, we certainly owe a profound apology.

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*Editor's Note: Seth Levine, research consultant for the C.I.O. Maritime Committee in Washington, D.C., is known to follow the Communist line. While a student at the Massachusetts Institute of Technology in 1940, he was an officer of a Communist front organization.

SETTING OF Kaocast (white) on the right wall of the furnace of the port boiler of the ss GENERAL M. M. PATRICK.

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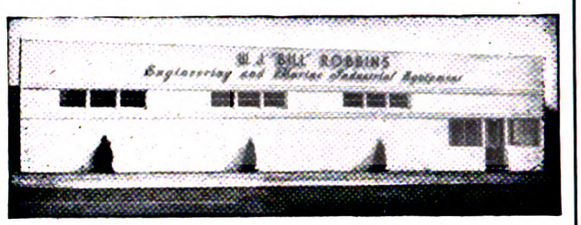

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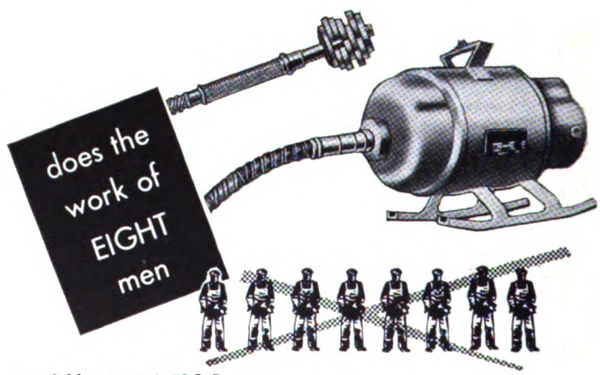

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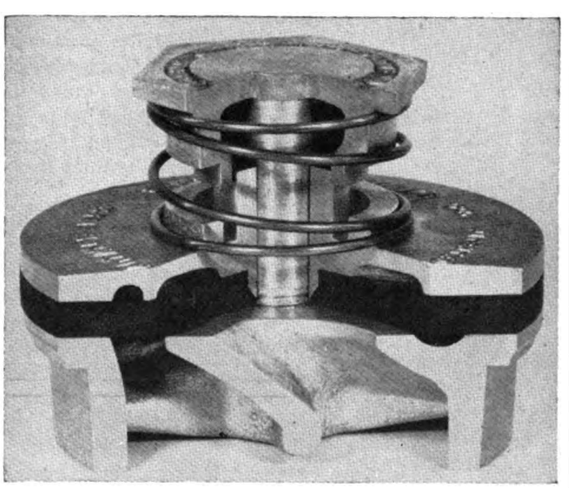

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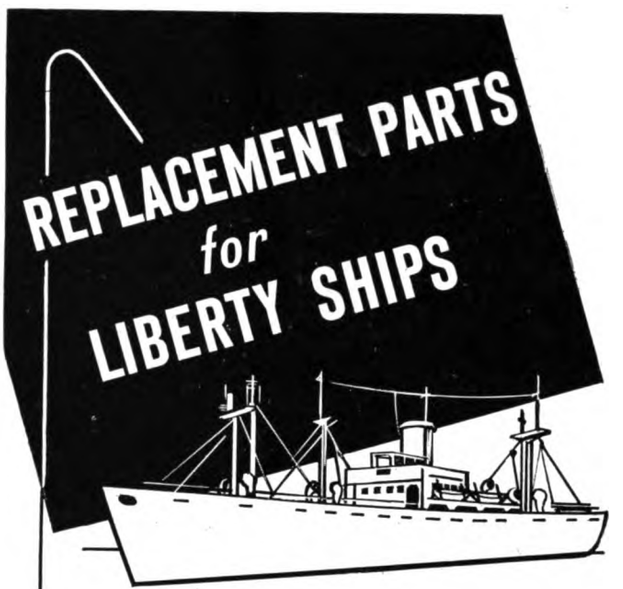

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EQUIPMENTALK

Marine Manufacturers Tell Their Stories . . .

Washington Iron Works Names J. M. Haughey Sales Manager

The appointment of J. M. Haughey as sales manager of the Washington Iron Works, Seattle has been announced. Mr. Haughey has been serving in a similar capacity with the Industrial Division of Packard Motor Car Co., Detroit, and brings a wide experience into his new position. Formerly a resident of the Pacific Northwest, "Joe" will be welcomed back by many friends.

Establishment of the position of sales manager marks the beginning of a new policy of the Washington Iron Works, aimed to provide better sales and service contacts with its many and varied customers. Cognizant of changing conditions, the company is adopting progressive marketing methods which will benefit its customers.

The Washington Iron Works was founded by and has been directed by the Frink family since 1882. Gerald H. Frink is president and Francis G. Frink vice president of the firm. The third generation, represented by James H. Frink, manager of the Diesel engine department, and Francis G. Frink, Jr., executive engineer, is now assuming the management of the company's affairs.

Starting as a small iron foundry, the Washington Iron Works has grown to be one of the most modern plants on the Pacific Coast, employing 500 people and covering an area of 10 acres in industrial Seattle. Its products cover a wide range, including Diesel engines, logging machinery and gold dredges.

The Washington Iron Works is developing and preparing to market many new products. Research into the requirements of its customers has also resulted in improvements to existing products.

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Carrier Moves Offices To Expand Marine Unit

Carrier Corp., of Syracuse, have moved to 3232 Greenpoint Ave., Brooklyn, where they have double the floor space available in their old location, it was recently announced. It is expanding the service arm of its marine department which provided a 24 hour service for ships in this area and supplies spare parts for shipment to any major port of the world.

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J. T. Thorpe & Son, Inc., fire brick contractors, are now in new offices at 70 Oak Grove Street, San Francisco, telephone YUkon 6-5217. Oak Grove Street is between Fifth and Sixth and Harrison and Bryant Streets.

WASHINGTON IRON WORKS, SEATTLE, EXECUTIVES . . . left to right: FRANCIS G. FRINK, JR., Executive Engineer; FRANCIS G. FRINK, Vice President; GERALD H. FRINK, President; J. M. HAUGHEY, Sales Manager; JAMES H. FRINK, Manager, Diesel Engine Department. Not represented in the photograph but also active in the firm are Philip F. Frink and Spafford Frink.

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Raytheon Equips 21 Vessels With Radar Sets

Raytheon Manufacturing Company, Waltham, Massachusetts, recently supplied The Atlantic Refining Company, Philadelphia, with 21 Mariners Pathfinder radars, which according to Raytheon is one of the largest single purchases of commercial radar equipment.

The initial installaton of this Raytheon equipment was on the tanker S.S. ATLANTIC MARINER. The company says this new 560-foot vessel broke all records on its maiden voyage from Corpus Christi, Texas, to Fort Mifflin, Philadelphia—averaging 16.33 knots in hauling 6,000,000 gallons of oil in four days, 18 hours and 55 minutes. The oil company's fastest vessels usually take five days for such a run.

Raytheon reports Captain Preston I. Williamson, master of the ship, said, "the magic eye" of the surface search radar on the bridge helped to make this speed possible. The ATLANTIC MARINER, he explained, could maintain speed in fog, rain and bad visibility because of the protection offered by Mariners Pathfinder radar.

Captain C. J. Hahs, port captain for The Atlantic Refining Company, said the company estimates any delay in a tanker voyage costs $100 an hour and the time saved by radar—which allows full speed in bad visibility—results in a great saving.

The 21 Raytheon equipments are of the 10 cm type for oceanic use and will be provided with the new 12-foot antenna reflector. This large reflector gives the definition usually obtained with the 3 cm system while retaining the all-weather dependability of 10 cm systems.

Raytheon has also stated that among other oil companies that have recently ordered Raytheon Mariners Pathfinders for their tankers are Keystone Shipping Company (13 units) and Sun Oil Company (11 units).

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Chas. Jackson Becomes Sales Agent for De Boom Paint

Charles I. Jackson, well-known in southern California marine circles, is now the sales agent in that territory for the De Boom Paint Company, San Francisco, maintaining offices and warehouse stocks with the Universal Galley Range Company, 2411 East Anaheim Boulevard, Long Beach, telephone Long Beach 702354. Mr. Jackson formerly was port engineer for Hammond Shipping Company.

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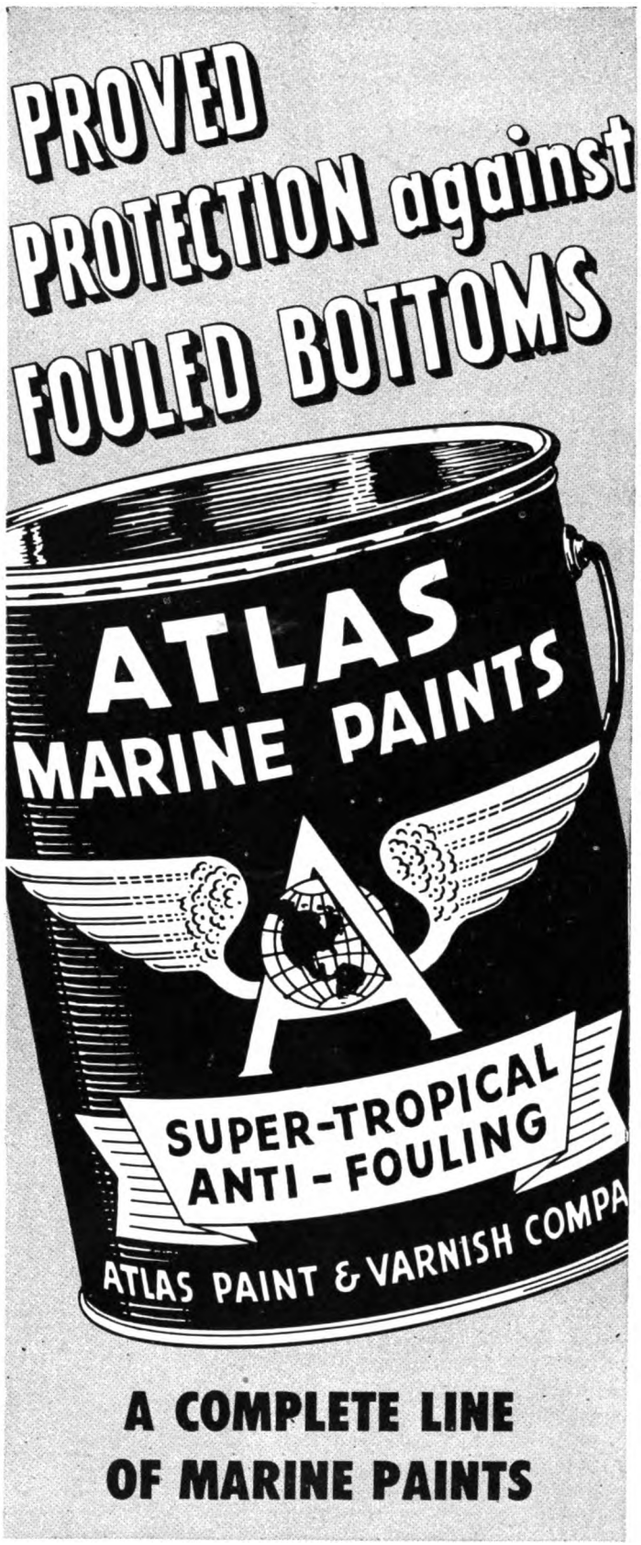

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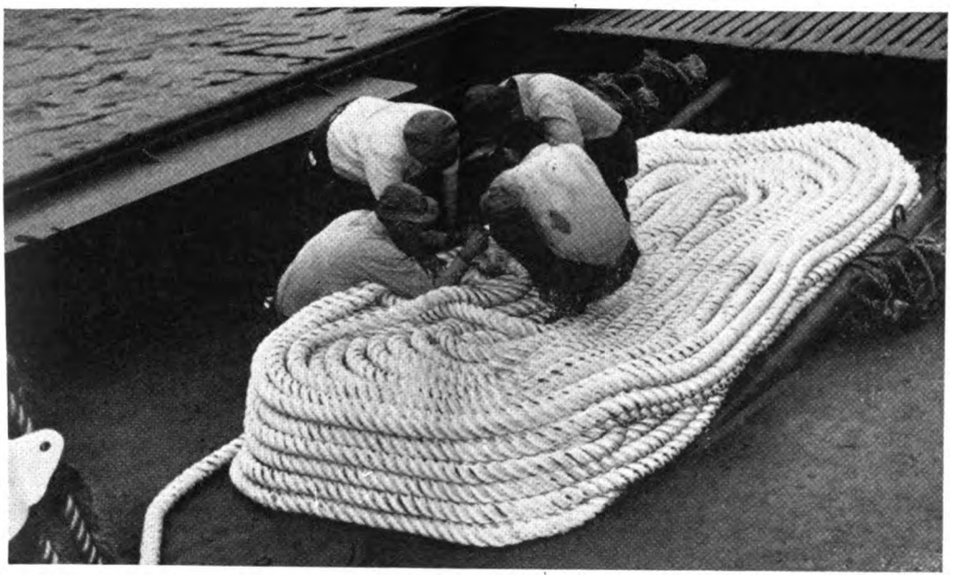

74,250 PAIR OF NYLON STOCKINGS could have been made of the nylon in this 8-inch hawser made for the MORAN TOWING & TRANSPORTATION CO. by the PLYMOUTH CORDAGE CO. Seen here aboard the tug MARGOT MORAN the hawser, 1,325 feet in length, has a breaking point strength of 105,000 pounds and is stronger than a 12-inch manila rope. It has a 48 per cent elongation to its breaking point or a working elasticity of 26 per cent at half load, the maximum it will likely be called upon to pull. Non-absorbent, this nylon hawser will not increase its weight when wet.

Drew & Co. Move to New San Francisco Offices

San Francisco offices of E. F. Drew & Company, Inc., the house of Ameroid, have been moved to Room 312, 268 Market Street, telephone Sutter 1-6268, where J. F. Churchill, Pacific Coast manager, Joe Lewis and George Martensen, marine representatives are now located. In southern California, the Drew company has named James Francisco as new marine representative. His headquarters are at the firm's office at 1736 East 15th Street, Los Angeles, telephone Prospect 3178. At San Francisco Arthur Wilson has joined the staff as office manager.

J. F. McDonough of the Baltimore office, E. F. Drew & Co., Inc., marine department, has recently returned from an extended trip to South America. He lectured on boiler water treatment and power plant chemicals in general before students of the Lloyd Brasileiro School in Rio de Janeiro, as well as giving lectures before the executive personnel of Government and privately owned companies in the Argentine.

The company announced that they are building a factory in Argentina for the manufacture of marine power chemicals. Buenos Aires is among the largest ports in the world for the export of food to Europe and many of the ships serviced by Ameroid call here.

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Boiler Article Receives Praise

"How Efficient Are Your Boilers?" an article by W. B. Hill, manager of marine sales and service, C. C. Moore & Co., San Francisco, appearing in The LOG for June, has been widely praised for its value and interest.

"A piece of technical writing handled with a touch that makes it as enjoyable as it is instructive," says the June 23rd sales letter of The Dampney Company of America. Other comments were equally complimentary.

⚓ ⚓ ⚓

Dynetric Balancer Installed at Marine Electric, Portland

Of vital industrial importance to Oregon and Washington, is the newly installed, large capacity dynetric balancer, installed by the Marine Electric Company, Portland, Oregon.

The electronic balancer might be said to be the entree of electronics into the machine shop, and its job is to detect minute variances in balance of rotating machine units such as, steam turbine wheels, electric motor armatures, crank shafts, and in fact any mechanical unit that revolves at a high speed.

The importance of this machine is borne out in the fact that metal masses have been known to explode because of certain vibratory conditions.

The electrical phase of the machine is somewhat similar, but many times more intricate than the conventional radio, and the personnel operating it must under-go special training in electronics peculiar to this equipment.

A rotary machine unit weighing eight tons may be mounted in a lathe like receptacle of the machine. Work fourteen feet long, by ninety inches in diameter is accommodated.

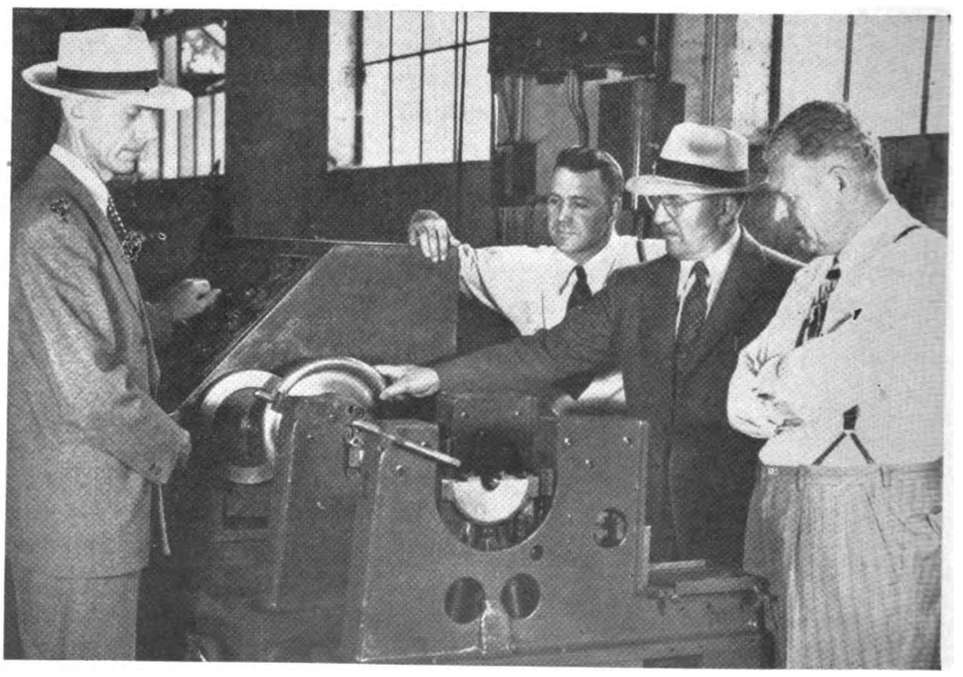
The machine indicates exactly where metal may be added, by welding or other means, or where it is necessary to grind off some of the material to bring about a perfect balance. The device is so sensitive it will almost develop a chalk mark.

The initial balancing job for the new machine, was a large steam turbine from the St. Helens paper mills, which had been repaired and machined by the Albina Engine and Machine Works, and had to be delivered in haste so the engineers of the paper company could float the unit in place by taking advantage of the high water.

Damon Trout, owner of Marine Electric Company announces that the machine is available to all machine shops and companys maintaining large equipment in this territory.

Trout has also installed the largest drying oven in the Northwest, for re-conditioning of electrical motors, generators, and miscellaneous equipment to quickly reinstate equipment ruined by the flood.

DYNETRIC BALANCER is installed at Marine Electric Company, Portland Oregon . . . left to right: JAMES E. SAVISKI, local head of the Maritime Commission; H. G. MARTELL, Texas Oil Co.; GEORGE E. GOODELL, Assistant Co-ordinator, Maritime Commission; and DAMON J. TROUT, Owner of the Marine Electric Company.



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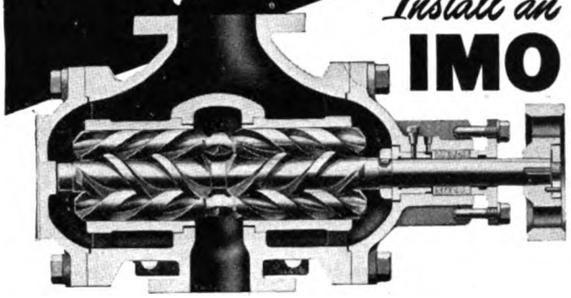
PULSATION A PROBLEM?

Install an IMO



With an IMO Pump delivery is not interrupted by the periodic strokes of a piston or the opening and closing of valves and ports. The turning of the rotors in an IMO forces the fluid from suction to discharge in a continuous, uniform flow.

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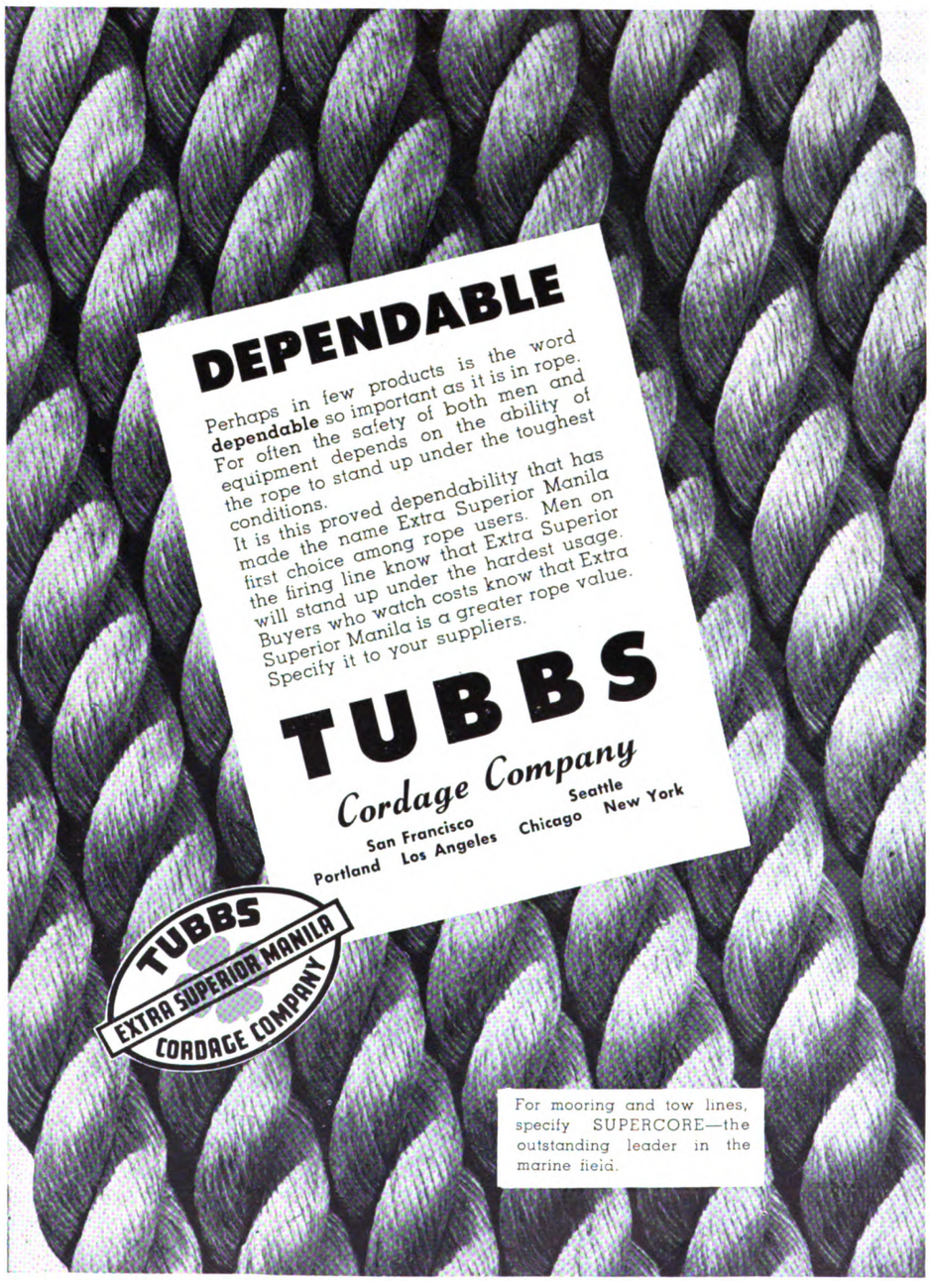
MARINE & INDUSTRIAL SUPPLY, INC., SEATTLE, STAFF ARE HOSTS AT OPEN HOUSE IN NEW QUARTERS AT PIER 50. . . . Left to right: BERT BAUGHMAN; JACK RAYMOND; ANGUS McLEOD; ALLISTER MacKINNON; MISS M. RICE; HUGH DUNCAN; O. G. RICE; V. A. HILLMAN. Staff members not in picture are Elliott DeForest, Secretary-Treasurer, and George Hansen of the Portland branch.



Thomas C. Wilson Appoints So. Calif. Representatives

Thomas C. Wilson, Inc., Long Island City, N.Y., manufacturers of tube cleaning equipment have appointed Kalstad Engineering & Sales Co., 38 Giralda Walk, Long Beach 3, California, sales representatives to handle the Wilson products in the Southern California area.

⚓ ⚓ ⚓

Chardon Rubber Distributed By The Gasket Shop, San Francisco

Announcement is made by Monroe Paulsen, president of The Gasket Shop, Inc., San Francisco, that his firm has become the Pacific Coast distributor for The Chardon Rubber Company, Chardon, Ohio.

The Chardon company manufactures drum head gaskets, extruded rubber specialties, molded rubber goods, refrigerator rubber strips and parts, rubber washers, rubber weather strips for car windows, washing machine gaskets and the like.

Mr. Paulsen says the Gasket Shop, which has the largest and best-equipped plant on the Pacific Coast for the manufacture of all types of gaskets, took on the Chardon representation to complete its line to give better service to the marine industries.

⚓ ⚓ ⚓

Mar-Co Announces Personnel Changes

Maritime Engineering and Ship Repair Co., Inc., San Francisco, announces R. F. Ferguson and J. A. Murphy have purchased the interests of W. H. Kirklin in their company. Also announced is the addition of Captain Frank A. Jones, formerly senior surveyor for the American Bureau of Shipping, to the firm's staff of supervisors. Captain Jones is a master mariner of many years' experience and is considered an authority on hull construction, repairs and surveys.

According to company plans new equipment will be added to the ship repair yard in the very near future.

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KOMUL is a well-proved coating for marine service. Application to damp surfaces first recommended it for use in spaces subject to condensation of moisture. Its continuous film and resistance to chemicals recommended it for use on steel decks under magnesite. Simplicity of application has made marine men want it for hard-to-get-at spaces.

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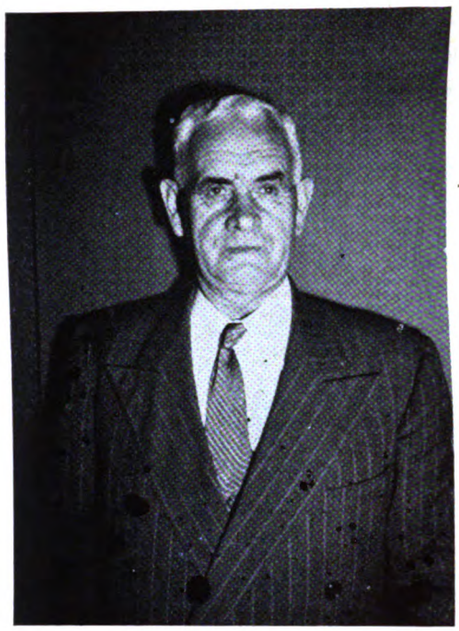


JOINS Commercial Ship Repair, Seattle and Winslow, Washington, as owner's representative with headquarters in Seattle . . . CAPTAIN J. DALE HANSEN.

Capt. Dale Hansen Appointed By Commercial Ship Repair

J. J. Featherstone and E. A. Black, partners in Commercial Ship Repair, Seattle and Winslow, Washington, have announced the appointment of Captain J. Dale Hansen as owner's representative with headquarters at Seattle.

In his new capacity Captain Hansen will represent Commercial Ship Repair on loading berth and other Seattle waterfront work and Everett Pacific Shipbuilding and Drydock Company on drydocking and conversion work in line with the working agreement recently drawn up between the two firms.

After sailing for the Westfal-Larsen Company, A/S, 33 years, 31 years as captain, Captain Hansen came ashore in November, 1947, to make Seattle his home. He had spent 24 years of the 33 sailing to Seattle, having brought the motor vessels LEIKANGER, BRIMANGER, HINDANGER and TARANGER out on their maiden voyages. His last command was the mv BRIMANGER. In 1930 he was transferred to Interocean Line, during the war he was in convoy duty in the North Atlantic, and returned to the Interocean Line at war's end. ⚓ ⚓ ⚓

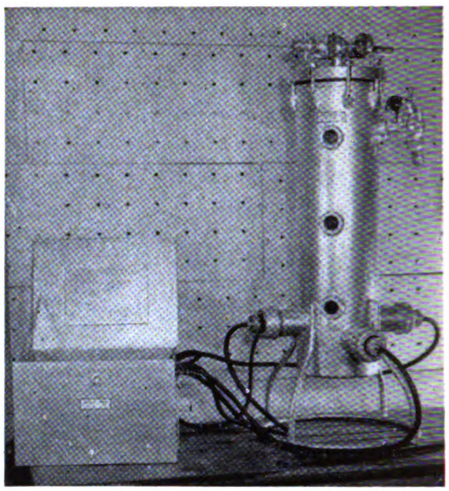
Harbor Supply Opens In Portland Area

Harbor Supply Company, one of San Francisco's leading ship chandleries, has opened a branch store on Swan Island, Portland, where it will maintain large warehouse stocks of supplies and equipment for deck, engine and stewards' departments. A staff of experienced personnel will give fast and courteous day and night service.

Nationally-known manufacturers to be represented by Harbor Supply in its new Portland office includes: Schermerhorn Brothers Co., cordage products; Great Western Cordage Co., Manila rope; Bethlehem Steel Corporation, wire rope; Boston & Lockport Co., tackle blocks; Walworth Co., valves and fittings; Griffin Manufacturing Co., hinges and butts; Peholl Manufacturing Co., screw products; Bright Star Battery Co., flashlights and batteries; Band-It Co., hose clamps and tools; Thomas Laughlin Co., shackles, hooks, etc.; Diamond Calk and Horseshoe Co., wrenches and pliers; Halstead Products, oils: cutting and penetrating; Palmer thermometers; Bell & Gossett, heat exchangers and centrifugal pumps; Fulton Sylphon Co., temperature controls; Pioneer Rubber Co., hose and mechanical rubber goods; Wilcox Crittenden Co., marine hardware; Young Company Iron Works, blocks; Anchor Packing; Heller Bros., files and hand tools; Chase Brass Co., brass and copper bars, sheets, tubing and pipe; Simonds Hack Saw Blades; Wilson Bohannon Co., bronze padlocks; Alemite Co., fittings and greases; Wilber & Sons, life saving equipment; Atlantic Pacific Mfg. Co., ring buoys; Lutomia Tool Co., scrapers and tools; Dixon Crucible Co., lubricating graphites, also a complete stock of high pressure forged steel screwed and flanged valves and fittings. ⚓ ⚓ ⚓

New Type Refrigeration System Cleaner

Refrigeration Components Company, 15 Steuart Street, San Francisco, have a new type refrigeration cleaner, which according to the company is original in design and is completely automatic, and does a first class cleaning job in just one third the amount of time taken by other cleaning methods.



Refrigeration Components' new type refrigeration system cleaner.

Its purpose is to eliminate all waste matters including scale, water, salt water, oil sludge and corrosion from coils, condensors, receivers and the entire system. The unit is reputed to be the only known one of its kind capable of taking 4 gallons of oil per hour in an oil log system and keeping a 40 hp Freon compressor in operation without any outside source of heat other than 5,000 watt of heat built within the unit itself.

It is made for use on ship regardless of voltage, either AC or DC and will operate on 110, 220 or 440 volts. It is small and compact and two men can carry it. Two hours or less is all the time required to put it in operation. There are three visibility windows to inspect the amount of oil being drawn back and the cleanliness of the system.

HARBOR SUPPLY STAFF AND BUILDING AT PORTLAND . . . back row, left to right: CARL TRAVIS, JOHN W. GREELEY, GUS WALLNER, DONALD W. JOHNSON. Front Row, left to right: HARRIET WHALLEY, VIOLET ANDERSON, ARDITH CAMMACK, FRANCES KRUGER, FRED C. LATSON. The Harbor Supply Portland branch is under the joint management of Latson and Johnson.

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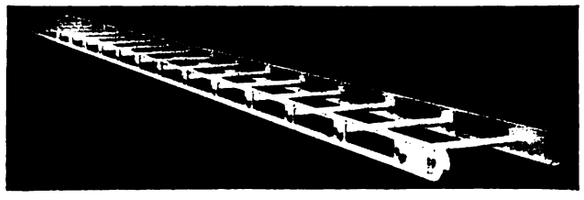

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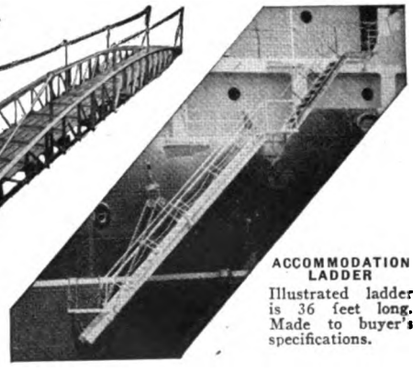

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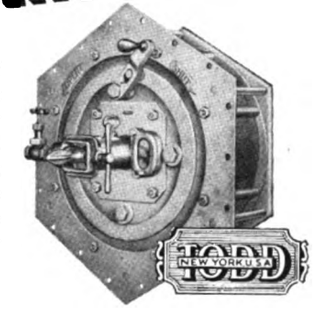

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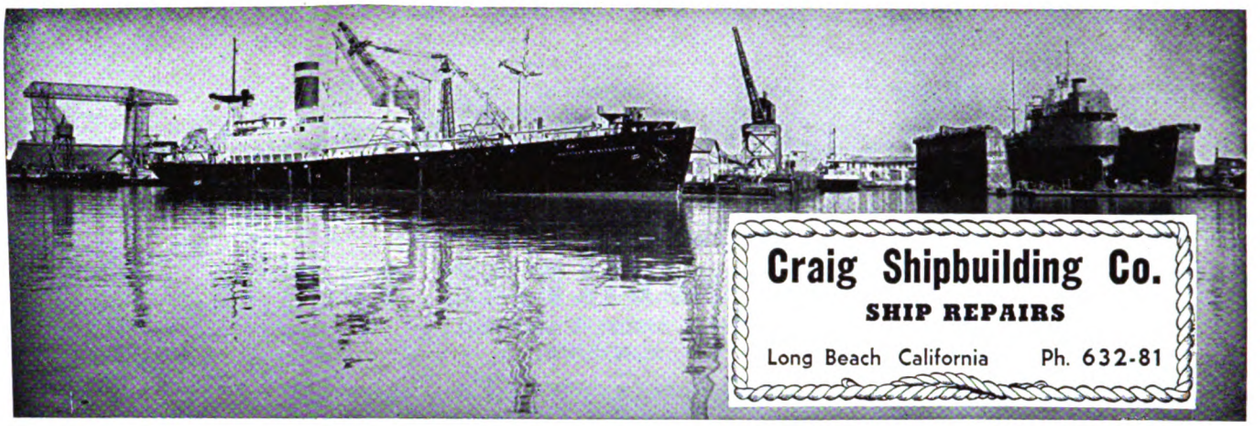

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ADVERTISERS INDEX

Aerial Products, Inc. 8
Albina Engine & Machine Works 53
Allen Pacific Co., Inc., Robert G. 66
Aluminum Company of America 13
Aluminum Ladder Company 61
American Brass Co. 43
American Export Lines 64
American Mail Line 62
Ames Terminal 53
Arnessen Electric Co. 52
Atlas Paint & Varnish Co. 55

Babcock & Wilcox Co. 37
Baier & Associates, L. S. 68
Baker Dock Co. 66
Bird-Archer Company of Calif. 65
Bludworth Marine 50
Boland Machine & Mfg. Co. 67
Bratsberg, Capt. A. J. H. 68

Catalina Island Steamship Line 65
Cavanaugh Machine Works 61
Columbia Machine Works 65
Commercial Ship Repair ..... Inside Back Cover
Cordes Bros. 66
Costello Supply Co., J. M. 65
Craig Shipbuilding Co. 62
Crane Packing Co. 49
Curtis Bay Towing Company, The 4

Dearborn Chemical Co. 63
De Laval Steam Turbine Co., The 57
Dravis Engineering & Machine Works 62
Drew & Co., Inc., E. F. 1
Duke's Packing Co. 59

Everett Pacific Shipbuilding & Dry Dock Co. 59

Forster Shipbuilding Co., Inc. 61
Foster Wheeler Corp. 11

General Engineering & Dry Dock Co. 63
Gibson, D. M. 45
Gigy & Associates, M. J. 66
Gladding, McBean & Co. 67
Gow, Inc., Alexander 63
Griffiths & Sprague Stevedoring Co. 64

Hagan Corp. 41
Hanson, H. C. 68
Harbor Supply Co. 47
Harris, Manly S. 68
Hart & Burns, Inc. 50
Hendry Co., C. J. 12
Hickman Engineering Co. 65
Hiller, Paul W. 67

International Nickel Co. 7
Isherwood & Co., Ltd., Sir Joseph W. 67

Jeans, Capt. Harvey A. 68

Kearfott Co., Inc. 66

Long Beach Marine Repair Co. 57
Long Beach, Port of 45
Luce & Co. 46

Marden & Hagist 55
Marine Electric Co. (Portland) 63
Marine Electric Co. (San Francisco) 65
Marine & Industrial Supplies & Service, Inc. 64
Marine & Industrial Supply, Inc. 67
Marine Service, Inc. 66
Maritime Engineering 66
May & Smith Co. 66
Moore & Company, C. C. Engineers 37
Moore-McCormack Lines 52
Morrison & Bevilockway 67

Nickum & Sons, W. C. 68
Nordberg Manufacturing Co. ..... Front Cover & 3
Nystrom, Capt. E. W. 68

O'Donnell Copper Works, E. M. 67
Oxi Corp. 22

Pacific Marine Refrigeration Co. 66
Pacific Marine Supply Co. 65
Perry, L. C. 68
Puget Sound Bridge & Dredging Co. 64
Puget Sound Freight Lines 64

Radiomarine Corp. of America 15
Raytheon Manufacturing Co. 6
Refractory Coatings Co. 63
Robbins, W. J. "Bill" 52
Rober Co., W. H. 67
Roebling's Sons Co., John A. 9
Ross Heater & Mfg. Co., Inc. 46
Rothschild International Stevedoring Co. 67

Seaboard Machinery Corp. 5
Seattle Marine Surveyors 68
Seattle, Port of 57
Selby, Battersby & Co. 59
Shaw Bros. & Associates 68
Shell Oil Co., Inc. 21
Sherritt & Headman, Inc. 65
Sims Pump Valve Co., Inc. 53
Socony-Vacuum Oil Co., Inc. ..... Inside Front Cover
Standard Distributing Co. 49
Standard Marine Supply, Inc. 63
Standard Oil Co. of Calif. 17
Sumco Products, Inc. 14
Swett & Co., George E. 55

The Texas Company ..... Outside Back Cover
Thompson Co., J. Paul 68
Thorpe & Son, Inc., J. T. 67
Todd Shipyards Corp. (Combustion Equipment Div'n) 61
Trenko, William D. 50
Tubbs Cordage Co. 58

United Fruit Co. 10

Weeks-Howe-Emerson Co. 64
Welin Davit & Boat 2
Western Asbestos Co. 62
Western Machinery Corp. 67
Wickwire Spencer Steel Div'n 19

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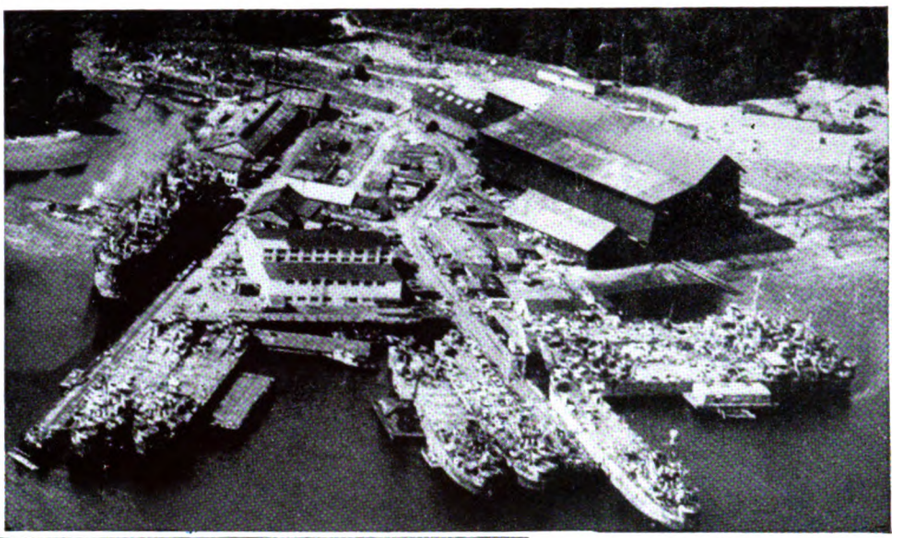

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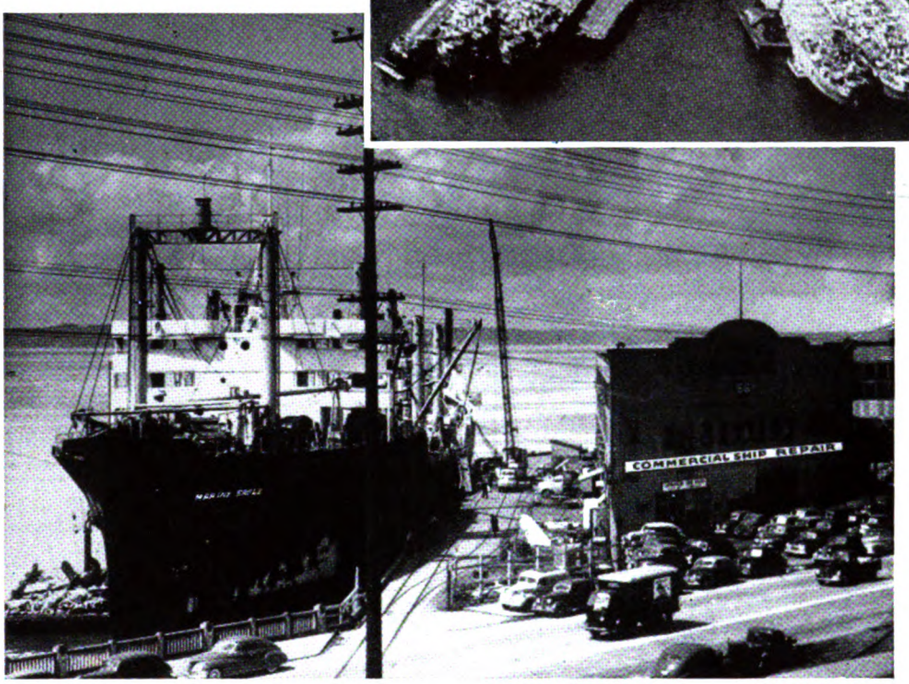

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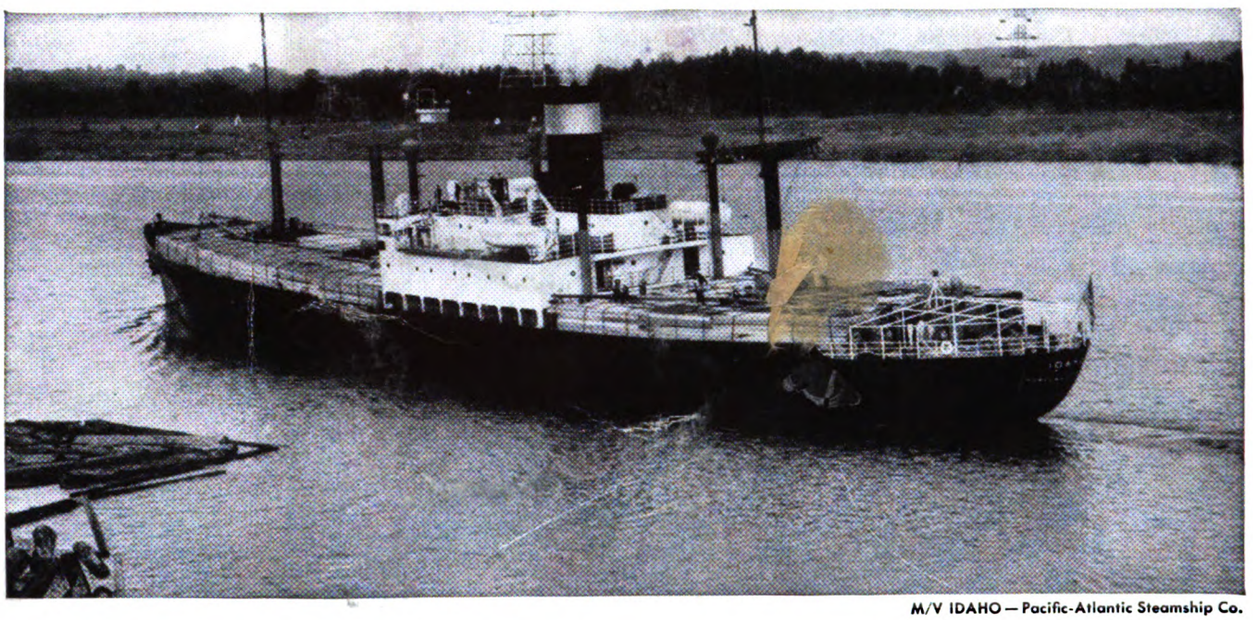

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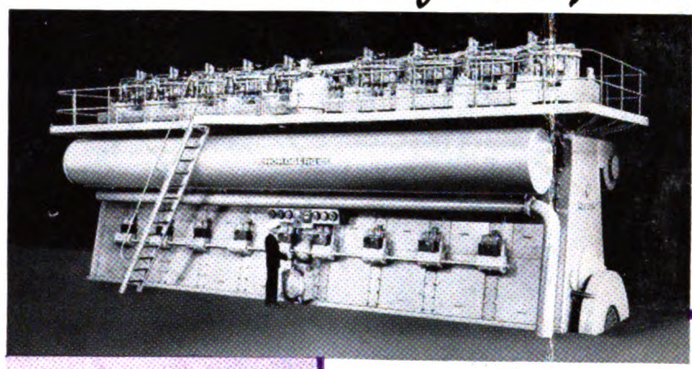

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See Page 3

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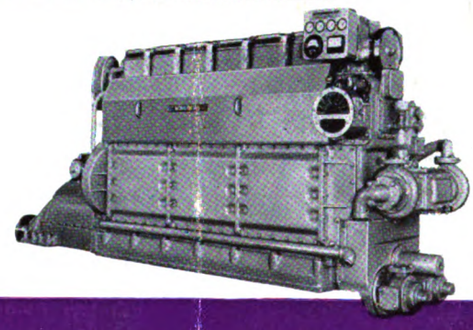

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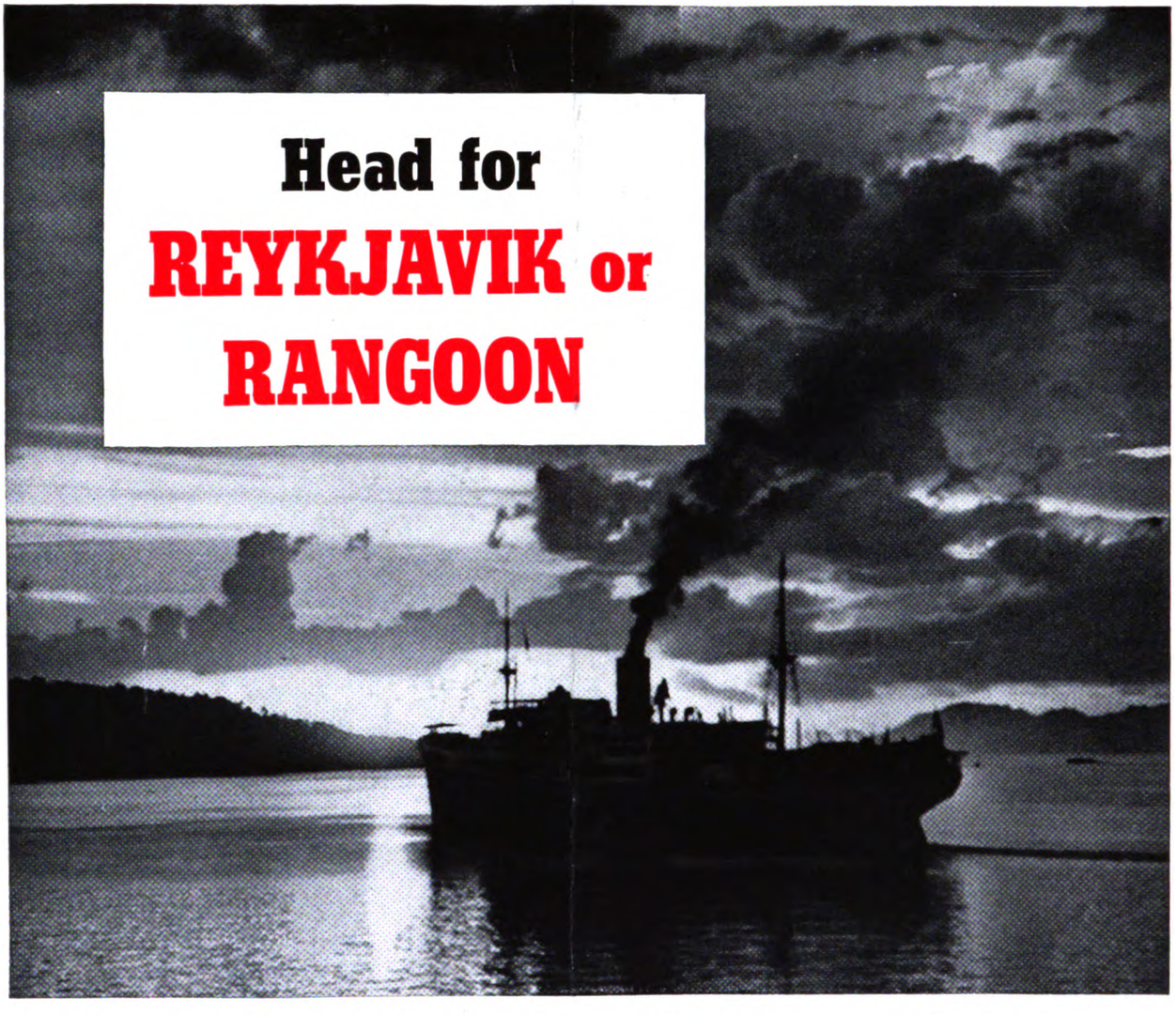

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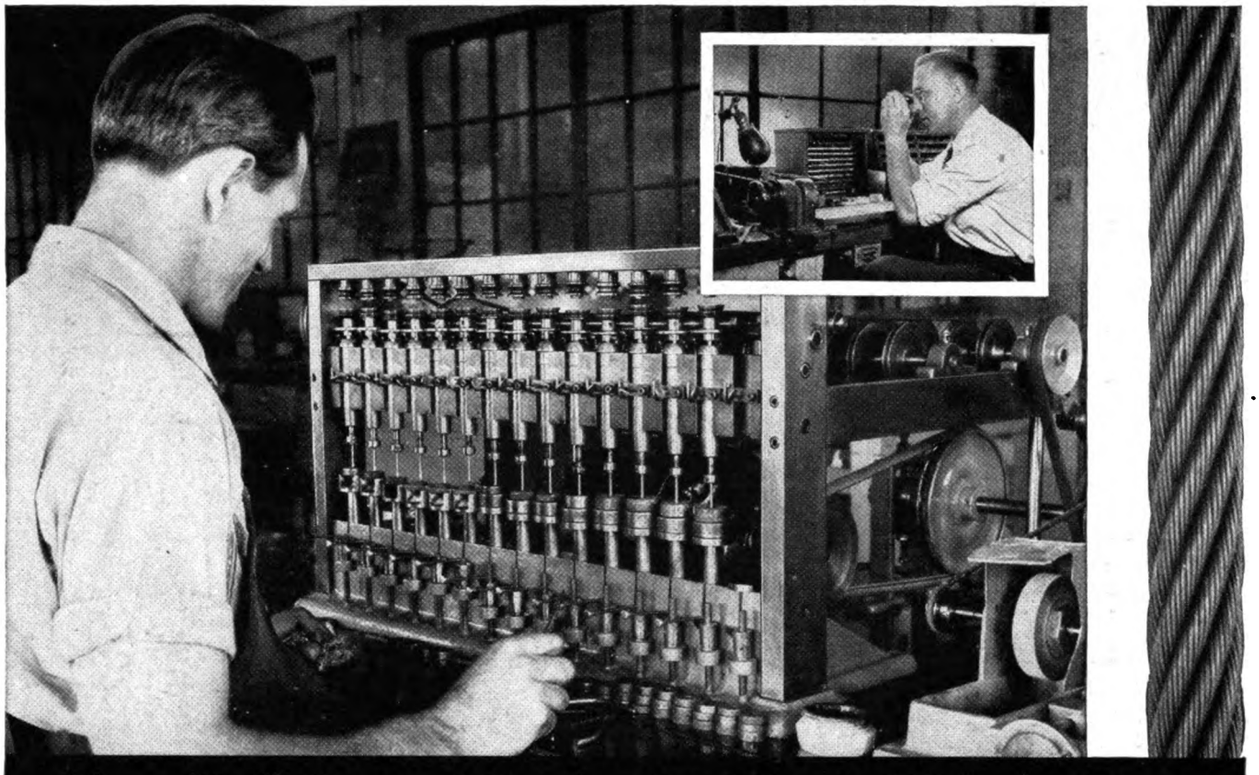

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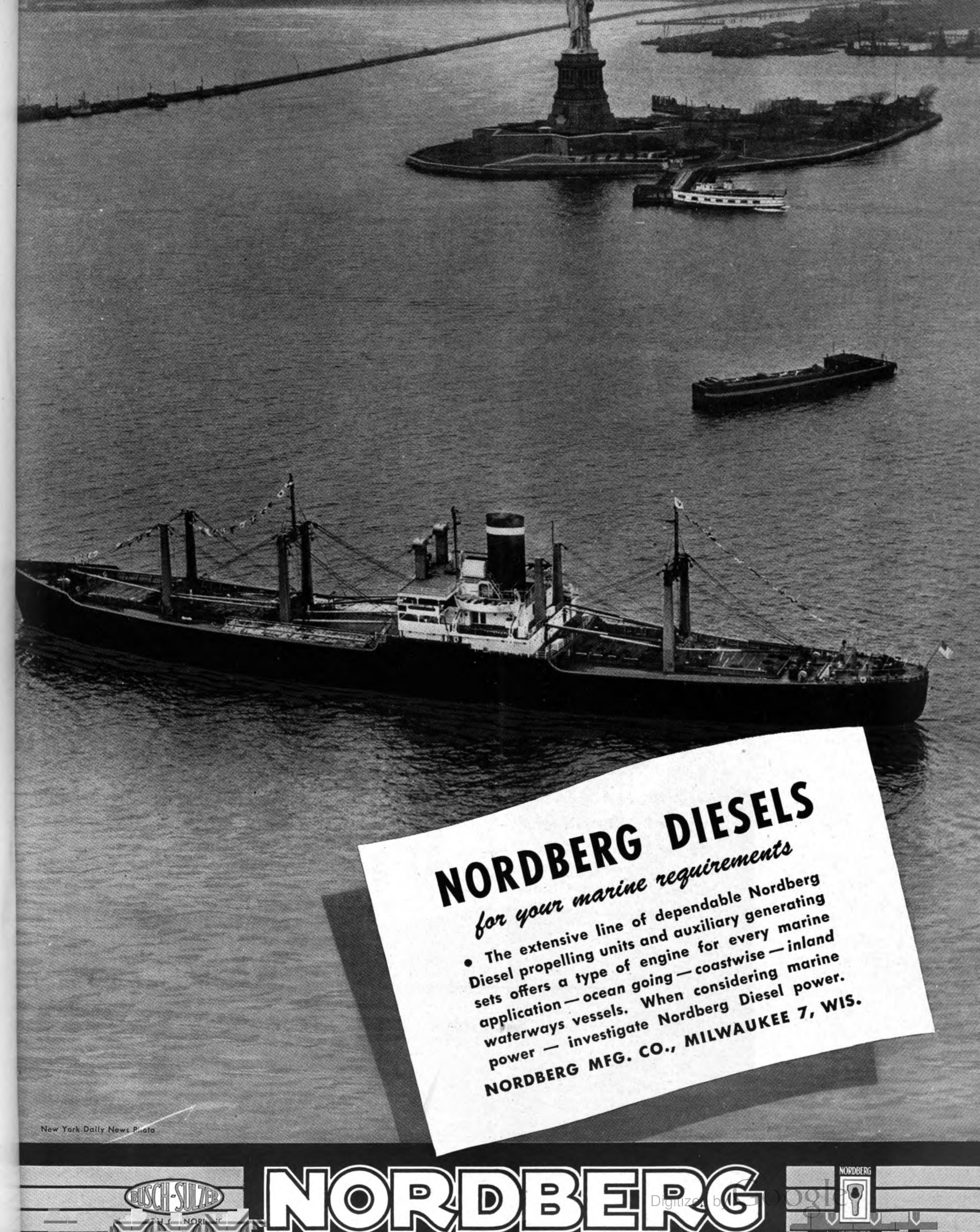

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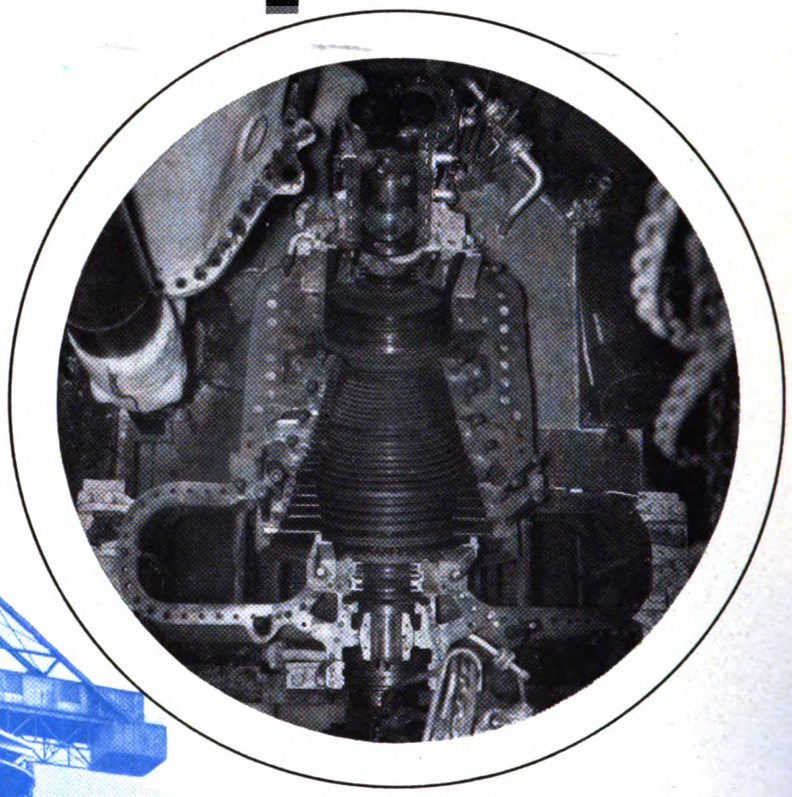

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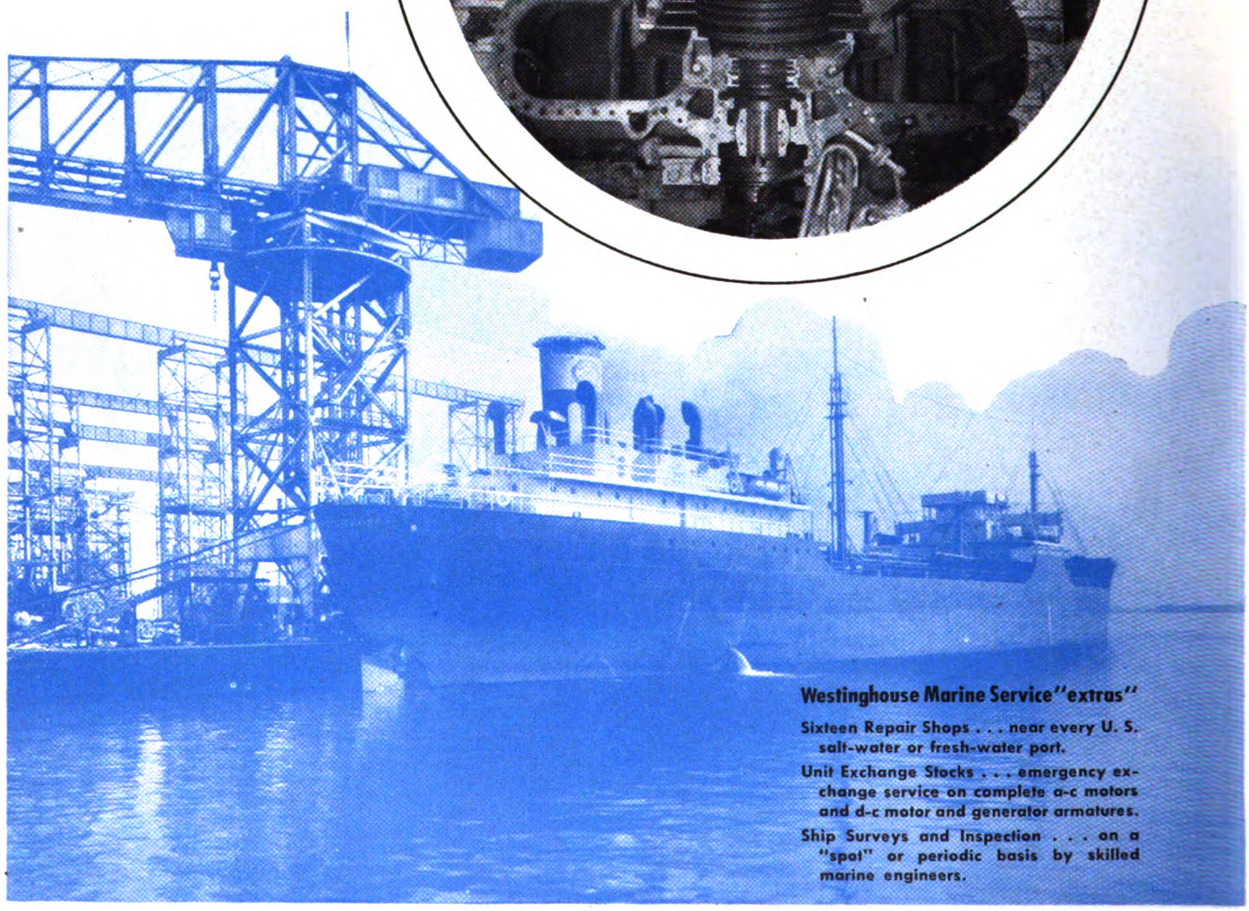

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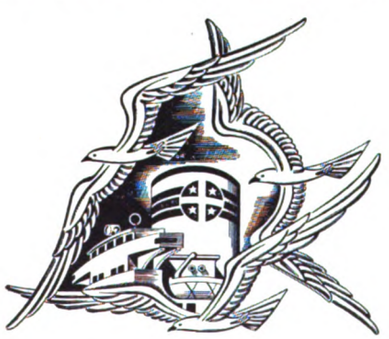

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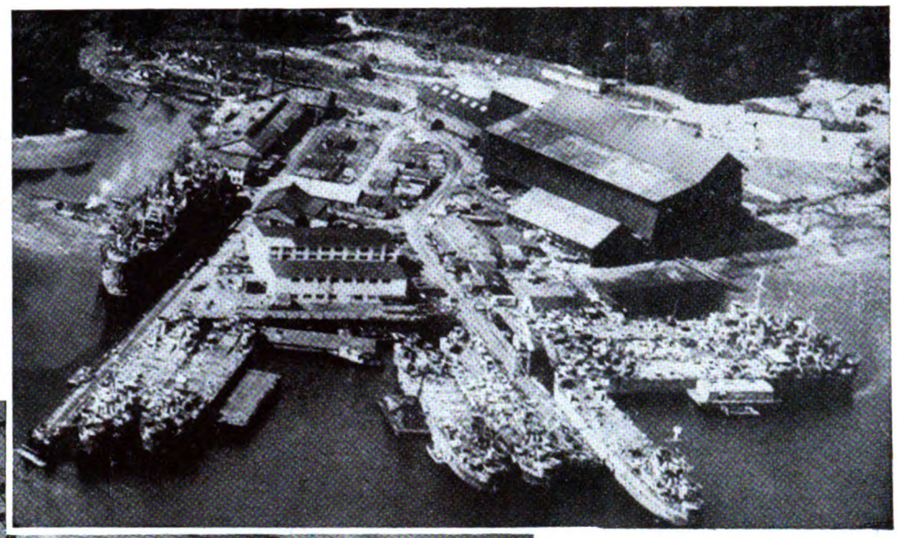

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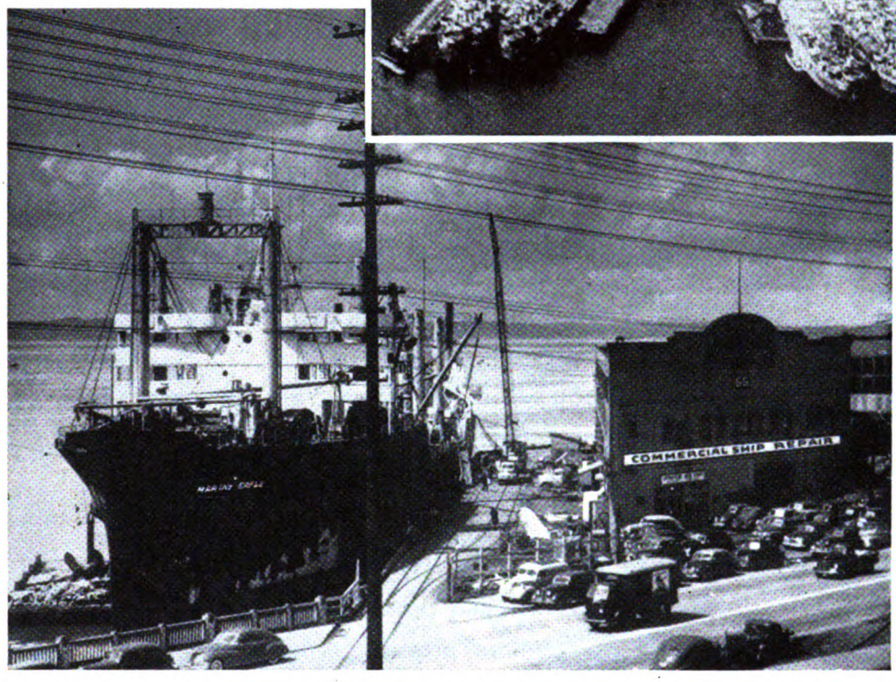

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E. A. BLACK
MAin 3122

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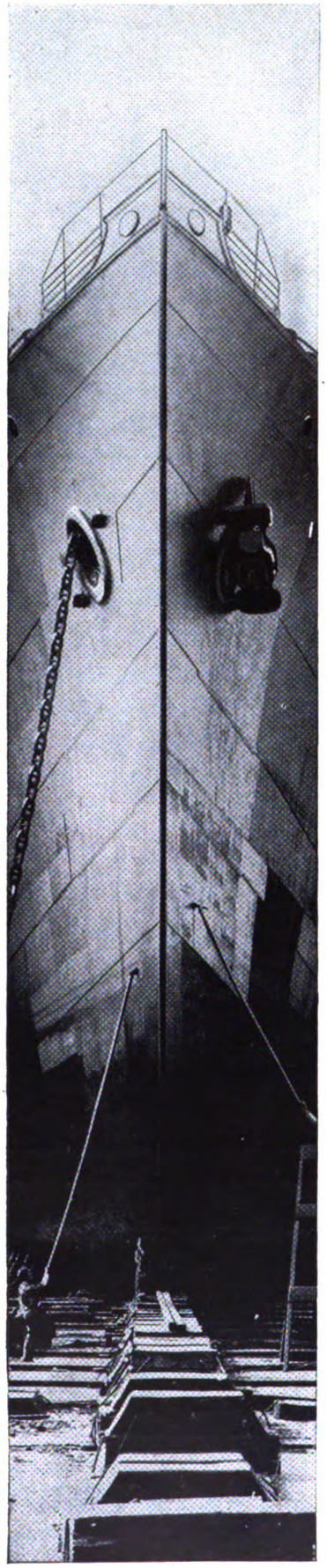

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Still represents the greatest advancement in commercially produced anti-fouling paints

There is good reason why many ship owners, especially those who operate in the tropics, regularly specify INTERNATIONAL "SUPERTROP" ANTI-FOULING. The resistance of this reasonably priced paint to fouling of all kinds far exceeds that of any other commercially produced bottom composition. It furthermore provides greater protection against corrosion than is offered by other anti-fouling coatings.

✕ ✕ ✕

The effectiveness of "SUPERTROP", however, like that of all other protective paints is in a great measure dependent upon proper application. Following the common sense practice outlined in the INTERNATIONAL booklet "The Painting of Ships" will go a long way in reducing maintenance costs. Send for a copy.

International Paint Company, Inc.

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Instant, accurate transmission of engine or docking orders. Self-Synchronous Design. 115 Volts A.C.

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Automatic Temperature Compensation and Automatic Supervision to control up to 10 cell test points. 115 Volts A.C.

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Main and Emergency Switchboards designed to specifications.

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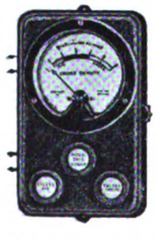

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Direct boiler room indicator of combustion conditions.

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Distributors for Bendix Marine Supersonic Depth Recorder.

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Weatherproof and water tight models.

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Visual and audible signals for power failures.

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Engineered to Marine standards, precision manufactured, thoroughly sea-tested. Your guarantee of accurate, reliable performance.

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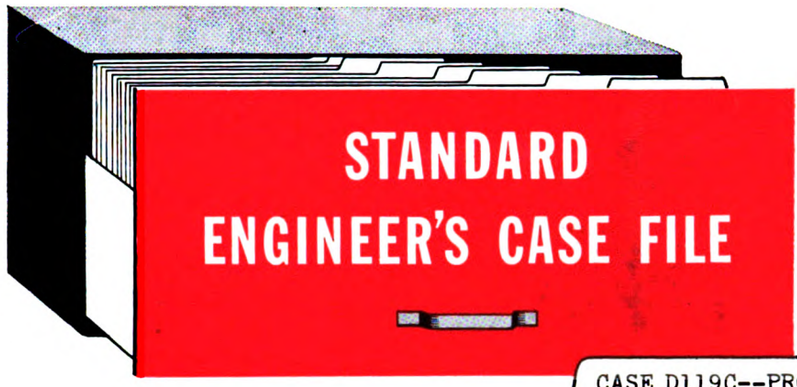
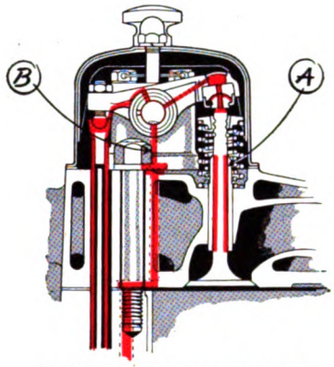


CASE D119C--PROVIDING GOOD VALVE ACTION IN DIESEL ENGINES.



DIESEL ENGINE VALVE ASSEMBLY

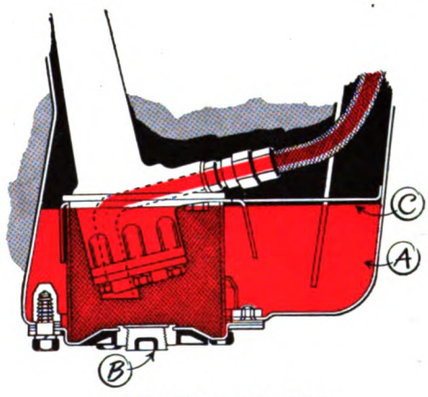
When Diesel engines, operating in tough heavy-duty service, were lubricated with compounded RPM DELO Diesel Engine Lubricating Oil, valve stems and guides did not gum up. They received thorough lubrication at all times and wear was negligible. RPM DELO Oil is recommended for all types of Diesels. Comes in several viscosity grades to meet all conditions.

A. Specially selected oxidation-resistant base stocks and special compounds prevent formation of gum and lacquer . . . oil film adheres to hot or cold metal surfaces.

B. Detergent compound keeps oil passages clean and open . . . and allows free flow of adequate supply of lubricant to wear points.

RPM DELO Diesel Engine Lubricating Oil is non-corrosive to all bearing metals. This quality and high stability assure sound bearings in Diesels for long service periods.

CASE D119D--KEEPING PARTS CLEAN AND REMOVING CONTAMINANTS FROM DIESEL ENGINES.



DIESEL ENGINE CRANKCASE

Cylinder walls, pistons, bearings and other parts of Diesel engines in heavy-duty service remained free of lacquer, and all contaminants flowed out with drainings when RPM DELO Diesel Engine Lubricating Oil was used.

A. A special compound in RPM DELO Oil loosens and removes lacquer and other deposits from parts and oil passages . . . and they stay harmlessly dispersed in the oil.

B. The finely dispersed contaminants, including condensate and dust, flow out freely when crankcases are drained.

C. Another compound in RPM DELO Oil prevents foaming —allows accurate measurement of oil levels and delivery of sufficient lubricant by oil pumps.

The engine-cleaning qualities of RPM DELO Oil help reduce wear on parts and prolong greatly the operating periods between engine overhauls.

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20, California.

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DIESEL ENGINE RPM DELO LUBRICATING OIL

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The American Merchant Marine Looks Ahead!

THE American Merchant Marine Conference, sponsored by The Propeller Club of the United States in conjunction with its Twenty-Second Annual Convention, will be held in New York, October 13, 14 and 15th, 1948.

The Conference theme will be "The American Merchant Marine Looks Ahead!" Problems of vital concern to the American Marine Industry growing out of the period of world reconstruction and the rehabilitation of our domestic and foreign trade will be presented and discussed by recognized authorities. The Conference will concentrate the experience and wisdom of outstanding leadership upon subjects of utmost importance affecting the future of the American Merchant Marine.

Panel Discussion meetings will be held on October 13, 14 and 15th; the American Merchant Marine Conference Luncheon and Session on Thursday, October 14th; Propeller Club Convention Session on Friday, October 15th; and on the evening of that date, the annual American Merchant Marine Conference Banquet.

The necessity for constructive and coordinated effort is more apparent today than ever before. . . Your cooperation and participation are needed in this program to foster the best interests of the American Merchant Marine as an essential factor in the national defense and our economic welfare. . . Arrange now to attend the American Merchant Marine Conference and to take part in this important annual gathering of the American Marine Industry.

AMERICAN MERCHANT MARINE CONFERENCE

THE WALDORF-ASTORIA – NEW YORK

October 13, 14 and 15th, 1948

For Complete Details and Advance Program, Address

The Propeller Club of the United States

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"Triple Watch round the great circle"

Three Sperry instruments now stand watch on each of the *nine* vessels operated jointly by the States Steamship Company and the Pacific-Atlantic Steamship Co., as they swing round the Great Circle track from U. S. West Coast ports to the Pacific Islands and the Orient. Radar, Loran and the Gyro-Compass are the trio which—in the words of a States Line captain—"add considerably to the shipmaster's peace of mind."

Sperry Radar provides Pacific-Atlantic captains with "indisputable" bearing and position . . . whether navigating the Tsugaru Straits in a heavy snowstorm, the Korean coast in rain and fog, or the An To to Jinsen run in the dark.

Other ways in which Radar is said by these shipmasters to help make navigation "easy and safe" are . . . preventing collision and loss of time en route or entering confined waters . . . determining the course and speed of oncoming vessels . . . checking the distance and bearing of harbor entrance buoys . . . detecting direction of wind on the radar scope.

Sperry Loran likewise brings "peace of mind" to Pacific-Atlantic shipmasters, helping them to surmount the handicaps of fog and heavy overcast and undependable celestial fixes.

With Loran the navigator obtains fixes that are "perfect" within range of U. S. Pacific Coast stations . . . "fair to good" from Aleutian Island and Japanese stations . . . "indisputably correct" as far as 800 miles off the Pacific Coast.

Sperry Gyro-Compass provides true north navigation despite electrical and magnetic disturbances.

First to equip its entire fleet with this modern trio of instruments, States Line vessels get there faster, more safely, over a shorter course . . . regardless of weather, visibility or what lies ahead.

SPERRY GYROSCOPE COMPANY

DIVISION OF THE SPERRY CORPORATION • GREAT NECK, N.Y.

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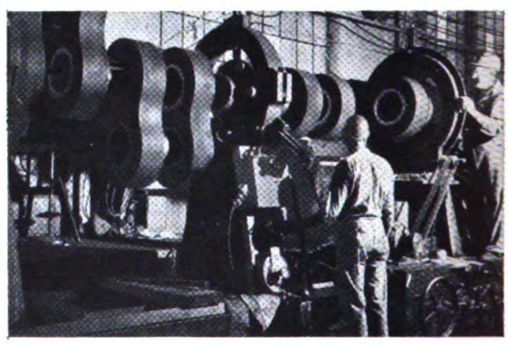
95 ACRES of hard-working shipyard

The Todd New Orleans yard is busy serving this bustling port. Here are 4 dry docks with capacities from 1,800 to 15,000 tons . . . more than a mile and a quarter of wharfage space along the Mississippi . . . extensive, modernly equipped shops.

• *View of a portion of main plant of Todd-Johnson Dry Docks Inc. at New Orleans.*

TODD's ring of shipyards, located around our Atlantic, Gulf and Pacific coasts, provide "ports" for service and repair for the ships of all nations. Equipped with the most modern of shipyard facilities, and staffs of experts in every phase of ship construction, repair, and maintenance, Todd yards are able to provide the *quick action* that saves operators both time and money. Mobile service is also available for ships at anchor or at dockside. *Whether your vessels need voyage repairs or major structural work, call on Todd.*



• *New crank shaft facing tool at work . . . typical of Todd service for speed and economy.*

TODD SHIPYARDS CORPORATION

LOS ANGELES DIVISION • SEATTLE DIVISION

Conveniently located on Atlantic, Gulf and Pacific Coasts

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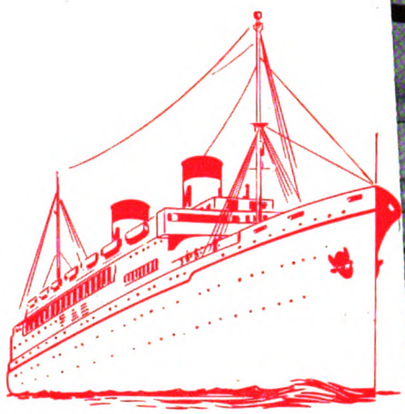
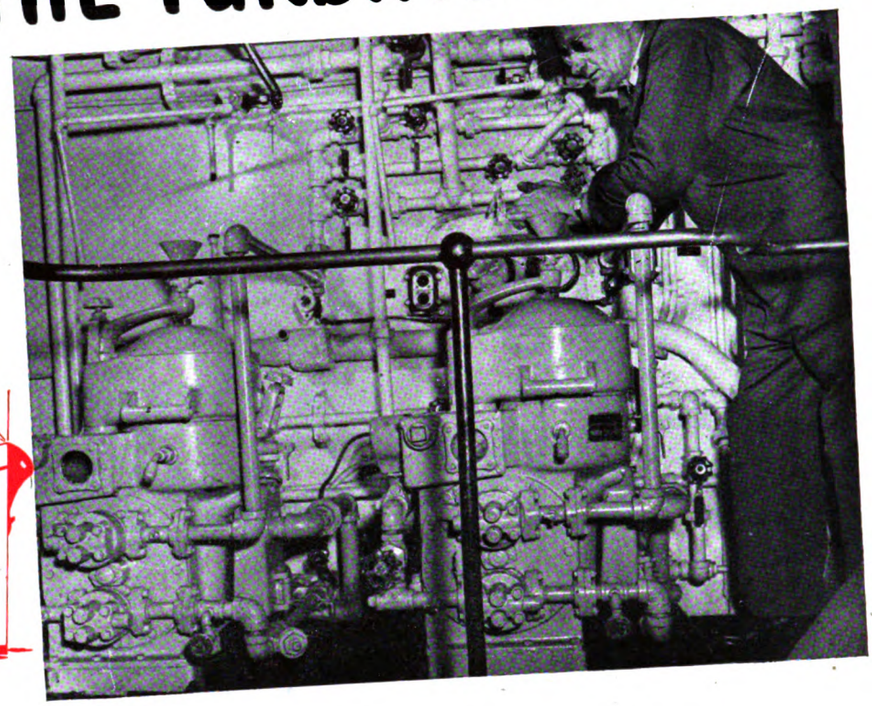
DE LAVAL CENTRIFUGALS

PURIFY THE TURBINE OIL

on the "Lurline"





DE LAVAL Oil Purifiers will protect the turbines of still another fine vessel. The Matson Line is the fourteenth operating company to select De Laval Oil Purifiers in recent months.

By means of centrifugal force, De Laval machines will remove from the turbine lubricating oil both of the contaminants that cause oil to sludge — ***dirt*** and ***water***. Condensate is continuously discharged; dirt is completely removed and stored in the bowl outside the zone of purification. De Laval centrifugals prevent any possibility that oil will be half-purified, half wet.

Long experience has shown that at sea centrifugal force is the most practical means of maintaining lubricating oil. A De Laval on continuous by-pass will rid the oil of impurities three or four times a day. It prevents trouble right at the source!

De Laval

THE DE LAVAL SEPARATOR COMPANY
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LUBRICATING OIL PURIFIERS

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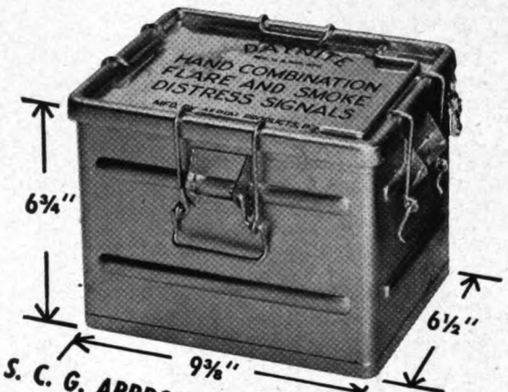
Equipping to Meet New Coast Guard Regulations?

EFFECTIVE JAN. 1, 1949



U. S. C. G. APPROVED (No. 160.023/1/0)

PAPER WRAPPED FIREWORKS TYPE WOODEN-STICK FLARES & SMOKE POTS

Remember

DAYNITE DISTRESS SIGNALS

SMOKE REG. U. S. PAT. OFF. FLARE

Save Stowage Space

(Above left) Close up ¾ actual size shows compactness of DAYNITE—only 5⅛" long, weight less than 7 oz. (Right) Watertight brass container of 12 DAYNITE SIGNALS showing careful packaging and snap-closure rubber-gasketed cover.

It's unbelievable—*but true.*

Twelve DAYNITE DISTRESS SIGNALS *(combining* 12 flares *and* 12 smoke signals) occupy less than one-fifth the space required to stow 12 wooden-stick, fireworks-type flares and 4 bulky smoke pots!

Thus, DAYNITE DISTRESS SIGNALS provide one and one-half times the protection in one-fifth the space!

And remember . . . each individual signal is itself absolutely watertight. Each signal — flare or smoke — will burn under water. Once ignited, it cannot be extinguished by wind or waves.

High visibility—compactness—lightweight—dependability—are additional reasons why DAYNITE DISTRESS SIGNALS have become the world-wide standard.

STOCKED BY SHIP CHANDLERS AT ALL PORTS

AERIAL PRODUCTS, Inc.

ELKTON, MARYLAND

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Shell scientists give facts on

SHELL TALPA OIL

expressly developed for low-speed Diesels

1. *The big problem with a Diesel lubricating oil—*

is to give it enough intestinal fortitude for the job it has to perform. To one who knows his Diesel engines and oils, that means the toughness to resist *carbon,* for one thing. Plus the extra important ability to fight oxidation . . . offset *lacquer* and *sludge* formation. *And without once letting down in protective lubrication.*

2. *To meet these requirements—*

Shell scientists took the highest quality naphthenic crudes they could lay hand to. These they carefully distilled, chemically refined and filtered. Then they tested them for months in all types of low-speed marine Diesels. And your own engine will show you why their final choice was Shell Talpa Oil.

3. *In your own ship's engine—*

Shell Talpa Oil promises three things. *A low carbon forming tendency* . . . to assure free-working rings and less engine wear. *Excellent resistance to oxidation* . . . to keep sludge at an extremely low minimum. As well as *proper viscosity* to keep a tight seal between piston rings and cylinder walls in hottest temperatures. And you can count on that kind of protection at all times!

ON YOUR NEXT TRIP OUT, BETTER CHANGE TO THIS ECONOMICAL, DEPENDABLE MARINE DIESEL LUBRICATING OIL

SHELL

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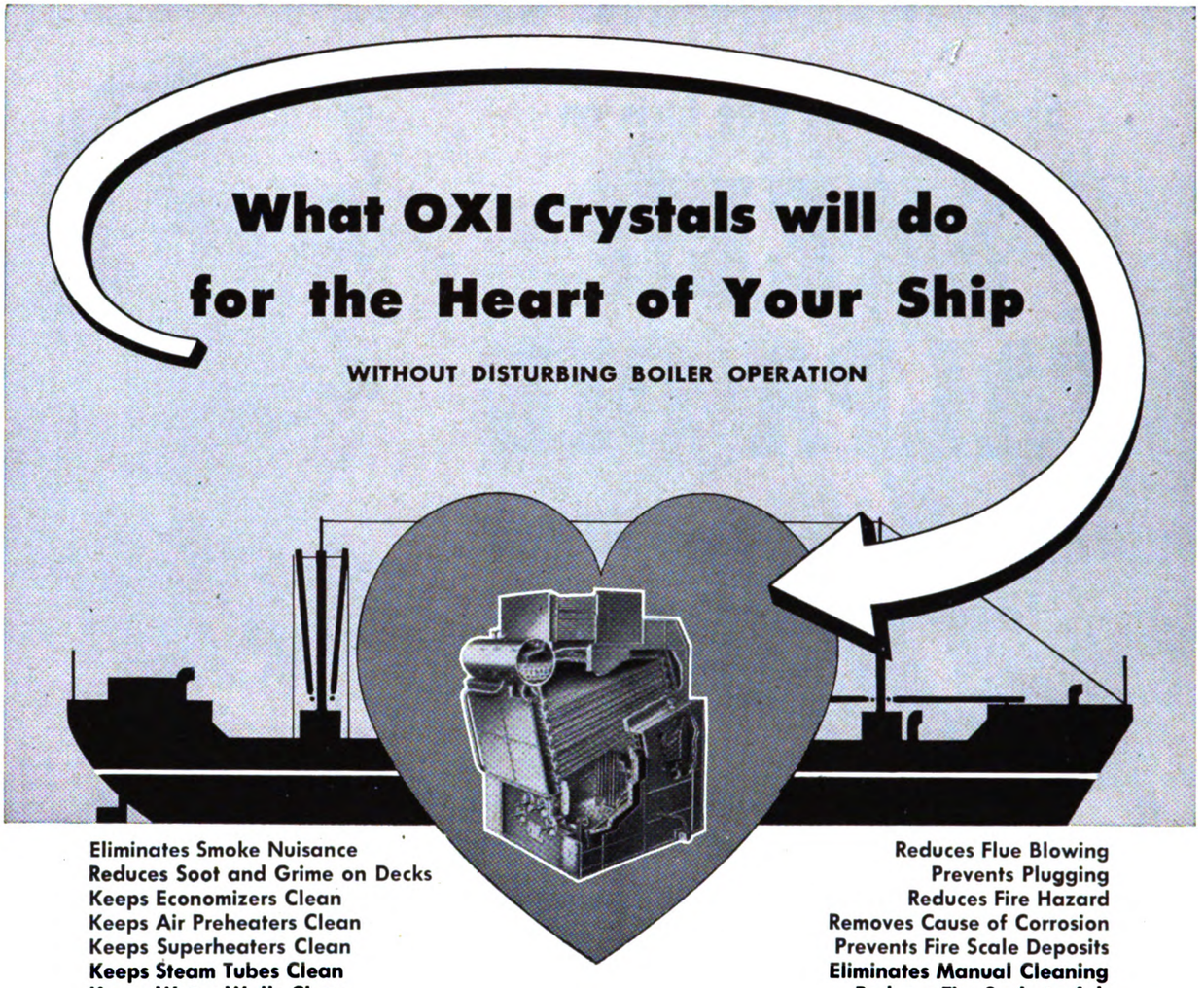
What OXI Crystals will do for the Heart of Your Ship

WITHOUT DISTURBING BOILER OPERATION



Eliminates Smoke Nuisance
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Reduces Flue Blowing
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Reduces Fire Hazard
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Eliminates Manual Cleaning
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CHEMICALLY CLEANS THE ENTIRE FIRESIDE OF BOILERS

FREE OXI SERVICE

At your request and without cost or obligation, one of our qualified trained engineers will inspect your boilers when in port, and submit to you a written report regarding the results that can be obtained with the Oxi Chemical Process. He will make the initial application and instruct your operating engineers in the most effective method to get maximum results in your boiler. He will then inspect your boilers periodically and submit reports of progress.

Consult an Oxi Field Engineer—now available at major ports—or write our General Office for further information.

FREE OXI MARINE SERVICE IS AS NEAR AS YOUR TELEPHONE

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More Proof...

that B&W Juniors give longer service!

Time after time, marine engineers bring in reports of the long-life service of **B&W JUNIOR FIREBRICK** . . . reports based on actual experiences of the men who *know*.

There's the recent report about the C-I whose boiler furnaces were lined with **B&W JUNIOR FIREBRICK.** These boilers had all-refractory furnace linings . . . yet **B&W JUNIORS** lasted 5 *years* before replacement.

Outstanding service such as this results from high resistance to spalling, high hot load strength, and structural soundness . . . qualities which make for long life, lower maintenance costs, reduced port time, and lower operating costs.

Call your **B&W** Representative. There's one in every major American port . . . ready to help on *all* refractory problems.

R-318

B&W REFRACTORIES PRODUCTS

B&W 80 FIREBRICK • B&W JUNIOR FIREBRICK
B&W 80 GLASS TANK BLOCKS • B&W INSULATING FIREBRICK
B&W REFRACTORY CASTABLES, PLASTICS AND MORTARS

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Stationary & Marine Boilers and Component Equipment
Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers
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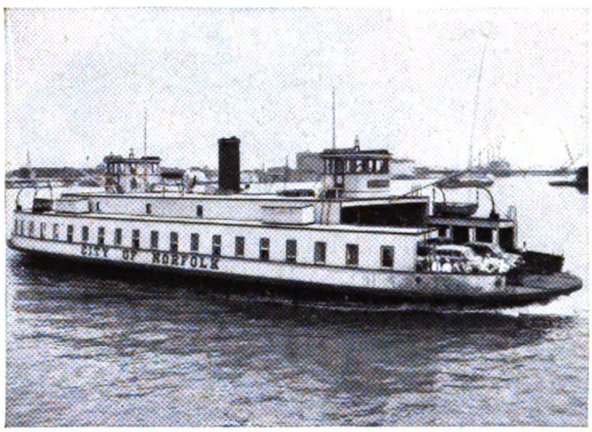
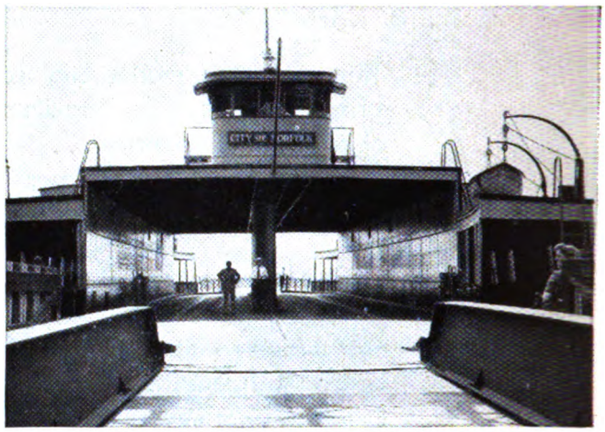
NO PROPULSION REPAIRS

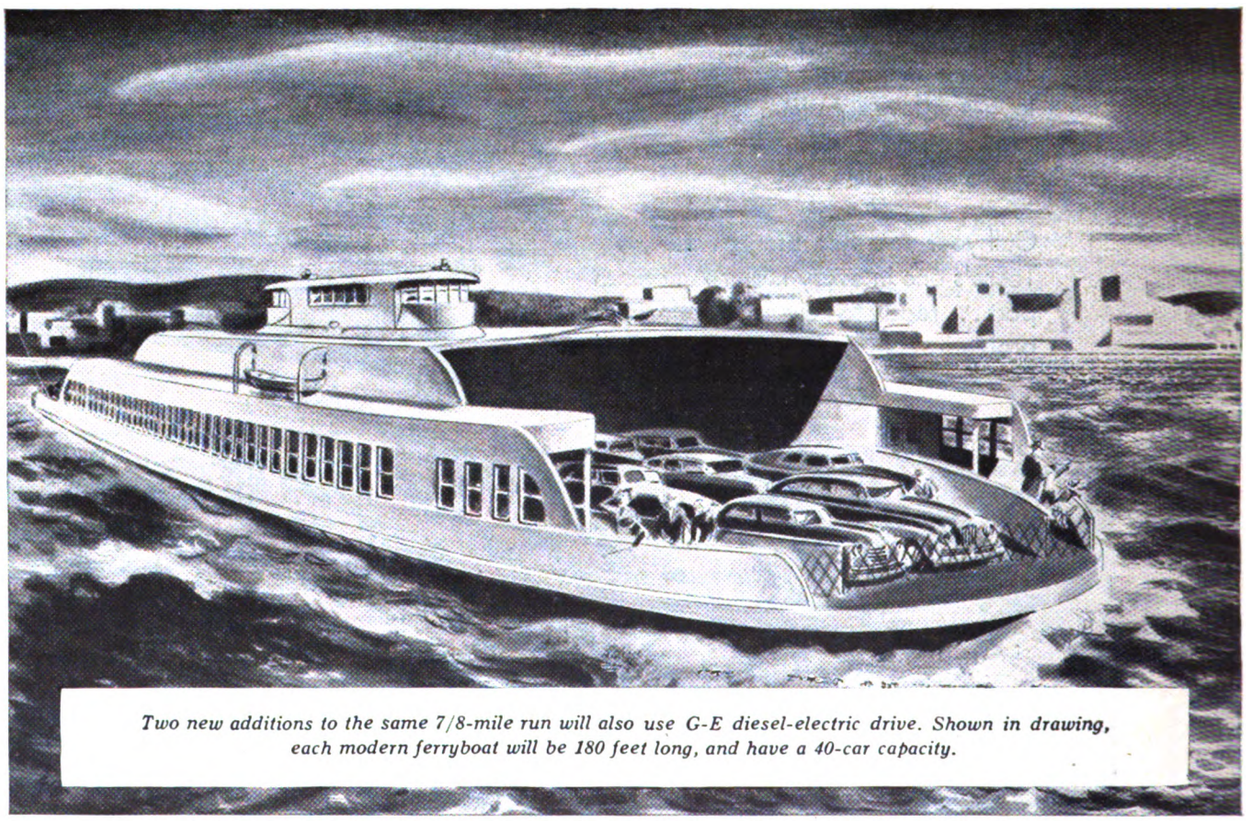
2 NEW FERRIES ALSO TO BE



Over 500,000 miles have been covered by the "City of Norfolk" in 19 years of service. Diesel-electric drive gives it exceptional maneuverability to navigate currents in congested waters.



The veteran ferryboat—175 feet long—can hold 36 cars. Diesel-electric drive permits wide latitude in arranging machinery, makes maximum deck and cargo space available for pay loads.



Two new additions to the same 7/8-mile run will also use G-E diesel-electric drive. Shown in drawing, each modern ferryboat will be 180 feet long, and have a 40-car capacity.

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IN OVER 665,000 TRIPS;

DIESEL-ELECTRIC DRIVEN

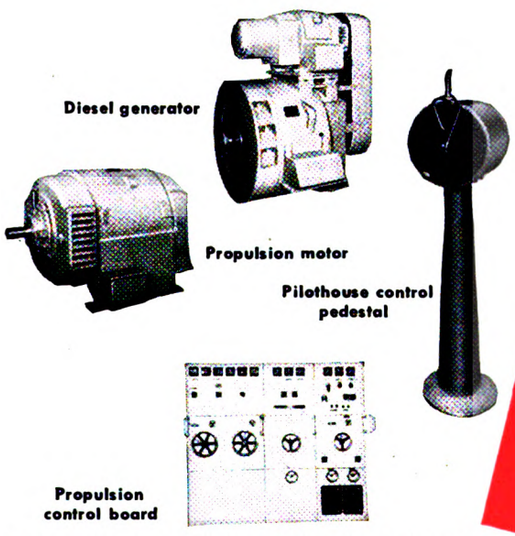
Superintendent of Norfolk County Ferries calls G-E Equipment "100% satisfactory" after 19 years' service on "City of Norfolk"

A hundred crossings a day, 350 days a year since 1929—and still going strong! That's the story of the ferryboat "City of Norfolk," a familiar sight on the Elizabeth River between Norfolk and Portsmouth. Throughout those 19 years its G-E diesel-electric drive has been—in the words of Mr. Chas. U. Freund, Superintendent of Norfolk County Ferries—"100% satisfactory!" No repairs have been needed on its two 245-kw, 250-v, d-c generators or its two 650-hp propulsion motors. No bearings or coils have been replaced on any of the rotating equipment. And no maintenance has been required other than turning down the commutators once!

G-E Equipment Chosen Again!

Now as a result, Norfolk County Ferries has turned to G-E again. Each of its two new diesel-electric ferryboats will be equipped with two G-E 350-kw, 250-v, d-c generators and two 800-hp propulsion motors, plus engine room and pilothouse control, and auxiliary power switchboards.

For *your* new ships, specify a G-E propulsion drive for speed, efficiency and reliability. And when you install G-E marine auxiliaries on your present ships you'll increase their over-all performance and efficiency. Added to this equipment, G-E Keep 'em Sailing Service helps cut port time, increases your ship's earning power. Let a G-E marine engineer discuss both equipment and service with you. Apparatus Dept., General Electric Co., Schenectady 5, N. Y.



Basic units of a typical G-E diesel-electric system (above) show its simplicity. Drive may be operated from pilothouse control pedestal (illustrated) or a handwheel in engine room.

PROPULSION DRIVES
DIESEL-ELECTRIC TURBINE-ELECTRIC GEARED-TURBINE
MARINE AUXILIARIES
and KEEP 'EM SAILING SERVICE

GENERAL ELECTRIC

200-67

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...since the white ships came...

Starting nearly half a century ago to sail to Caribbean ports for tropical fruits, the ships of the Great White Fleet began to serve the mutually beneficial trade between Middle and North America.

To coordinate cargo movements efficiently the United Fruit Company pioneered the first ship-to-shore radio in the Caribbean—known today as Tropical Radio Telegraph Company.

Passenger traffic as well as cargoes steadily increased—citizens of Middle and North America both, learning to know each other better.

Agricultural experiments with such new crops as abaca (manila hemp), the insecticide, rotenone, and African palm oil are progressing. Today these new crops, as well as the traditional nutritious foods of Middle America — bananas, cocoa, coffee, sugar — form part of the cargoes continually moving north, while—southbound—the Great White Fleet carries the products of northern farms and factories.

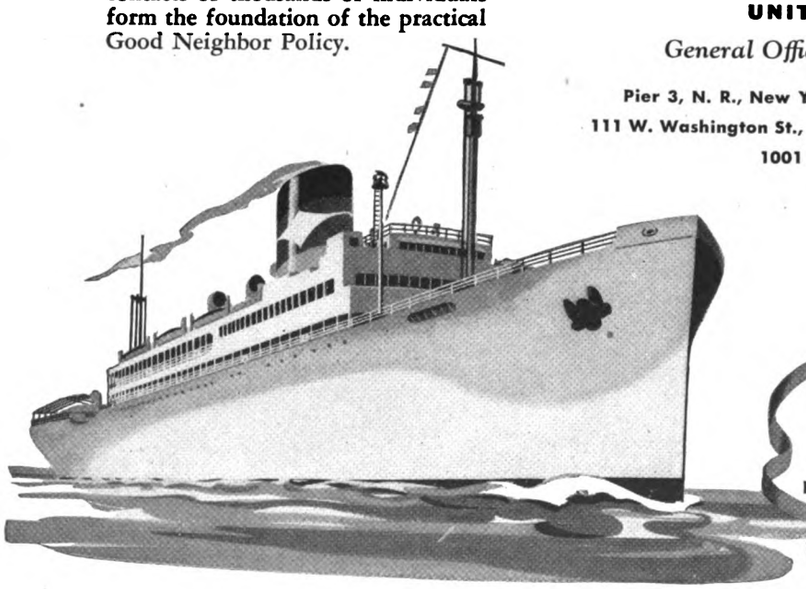
Harbinger of all this was the first white ship that sailed so long ago . . . and of much more, too . . . of the growing understanding and friendship between the Americas. The day by day contacts of thousands of individuals form the foundation of the practical Good Neighbor Policy.

GREAT WHITE FLEET

UNITED FRUIT COMPANY

General Offices: 1 Federal Street, Boston 10

Pier 3, N. R., New York 6 — 1514 K St. N. W., Washington 5
111 W. Washington St., Chicago 2 — 321 St. Charles St., New Orleans 4
1001 Fourth St., San Francisco 7



BRITISH HONDURAS — GUATEMALA
COLOMBIA — HONDURAS
COSTA RICA — JAMAICA, B. W. I.
CUBA — NICARAGUA
DOMINICAN REPUBLIC — PANAMA
EL SALVADOR — PANAMA CANAL ZONE

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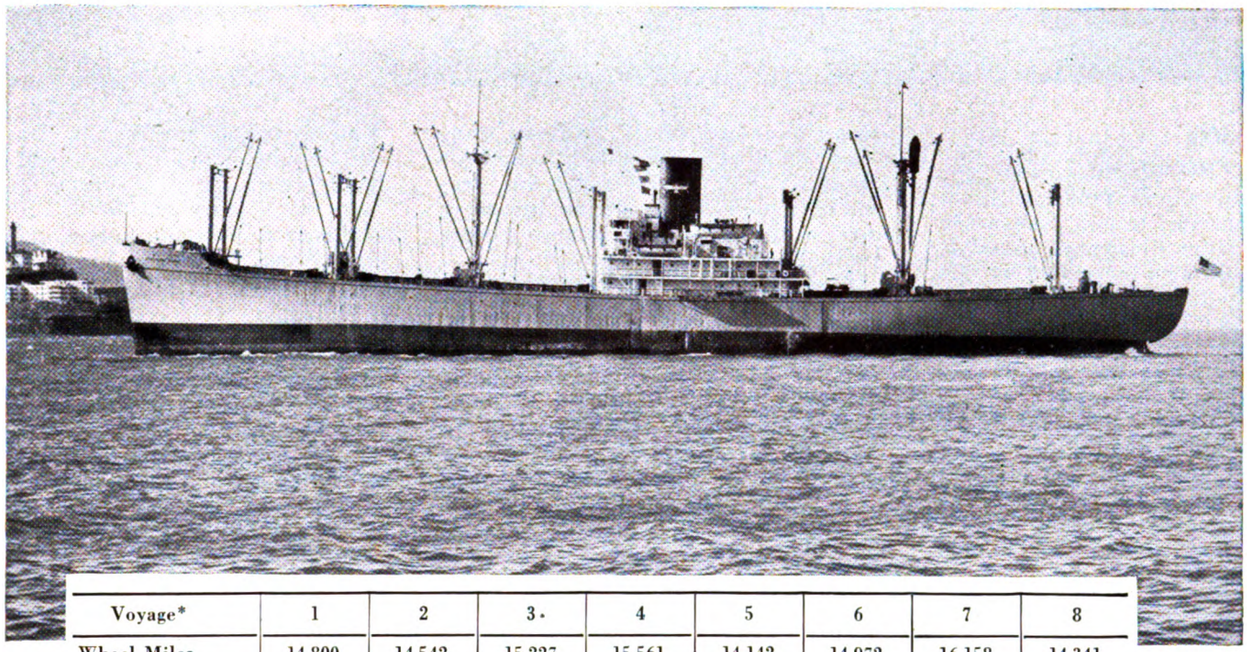
119,743 Miles of Evidence



Voyage*	1	2	3	4	5	6	7	8
Wheel Miles	14,800	14,542	15,227	15,561	14,142	14,972	16,158	14,341
Speed	16.66	17.8	17.06	16.59	16.73	16.81	15.96	16.67
RPM (Average)	80.5	81.2	80.4	79.1	79.1	78.45	76.2	78.78
Bbls. Fuel Oil (Running)	10,980	10,961	12,225	12,249	11,500	11,762	12,609	11,117
Miles per Bbl.	1.304	1.314	1.235	1.249	1.213	1.273	1.26	1.27

*Refrigerating equipment was installed in two holds after the third voyage. Figures for subsequent voyages include fuel required for operation of this equipment.

The "President Grant", a C-3 type freighter operated by American President Lines, is equipped with Hagan Automatic Combustion Control.

From 1945 to 1947, this ship made eight voyages, totaling 119,743 miles. We present above some of the more important details of these voyages.

Consistent operating efficiency, such as these figures show, is one of the many advantages of Hagan Automatic Combustion Control.

Our engineers will be glad to tell you about its installation in new construction, in Liberty ships or Victory ships.

HAGAN HALL BUROMIN CALGON

HAGAN CORPORATION

HAGAN BUILDING, PITTSBURGH 30, PA.

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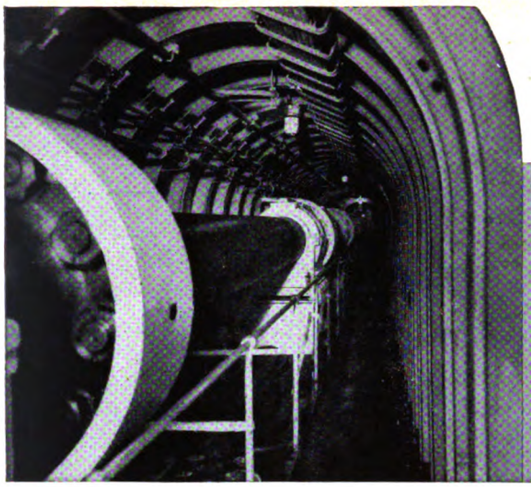


SHAFT ALLEY Chatter

Matson Shifts Executive Personnel

Hugh Gallagher and Randolph Sevier have been appointed to new positions in Matson Navigation Company, according to John E. Cushing, president of the company.

Vice president in charge of operation, Hugh Gallagher will transfer to Washington, D. C., where he will assume charge of the company's eastern actiyities. Mr. Gallagher has directed the commissioning of the LURLINE and the C-3 freighters, has been active in steamship association affairs, and is well acquainted with the shipping industry and its problems in Congress and the various bureaus in Washington.

Randolph Sevier, formerly vice president of Castle & Cooke, Matson's general agents in the Hawaiian Islands, has joined Matson in San Francisco as executive vice president. Mr. Sevier has had over a quarter of a century experience in handling the shipping affairs of the company in the Islands.

⚓ ⚓ ⚓

Bethlehem Manager Honored for Service

Starting his 54th consecutive year of service with Bethlehem and its predecessor companies, Mr. W. D. Crane, manager of Bethlehem Steel Company's Brooklyn 27th Street Yard, was presented with a brass marine barometer and clock recently at a luncheon tendered in his honor.

Amazingly spry for a man who has spent more than half a century in a strength taxing industry, Mr. Crane shied away from any talk of retirement.

⚓ ⚓ ⚓

Standard Fruit Plans To Expand Service

Blaise S. D'Antoni meant it when he said he would combine business with pleasure on his Caribbean cruise last month. The executive vice president of Standard Fruit and Steamship Company in New Orleans, returned to announce that his company will extend shipping service to the Dominican Republic and create a vast banana market between that country and the United States.

Details of his negotiations with the president of the Dominican Republic, Generalissimo Rafael Leonidas Trujillo and other high officials in government will be made public at a later date, he said, adding that expansion plans will be well underway by 1950.

He believes that the development of a banana market between the Dominican Republic and this country will be of great assistance in cementing relations with that country and the U. S.

Standard presently makes port calls in Havana, Cuba, and La Ceiba, Honduras.

⚓ ⚓ ⚓

Pacific Coast - European Run Inaugurated by Waterman

Regularly scheduled service between the Pacific Coast ports of Vancouver, Seattle, Portland, San Francisco and Los Angeles to European and Mediterranean ports has been inaugurated by Waterman Steamship Corporation. Bremen, Antwerp, Rotterdam, Genoa, Trieste and Piraeus will be served directly with this service.

All vessels are C-2 type dry cargo ships built by Gulf Shipbuilding Corporation, Mobile, Alabama, especially for and owned by Waterman Steamship Corporation. They have a top speed of 17½ knots, a capacity of 9,000 tons of cargo, and passenger accommodations for twelve people.

Waterman, one of the largest privately owned dry cargo fleets under the American flag, also maintains regularly scheduled service from U. S. Atlantic Coast ports and Gulf ports to Europe, the Mediterranean and Trans-Pacific to the Orient; and from Gulf ports to Puerto Rico. Coastwise service between U. S. Atlantic Coast ports and the Gulf is provided by its subsidiary, the Pan-Atlantic Steamship Corporation, and intercoastal service provided by the Arrow Line. Sudden & Christenson, Inc., are agents for Waterman on the West Coast.

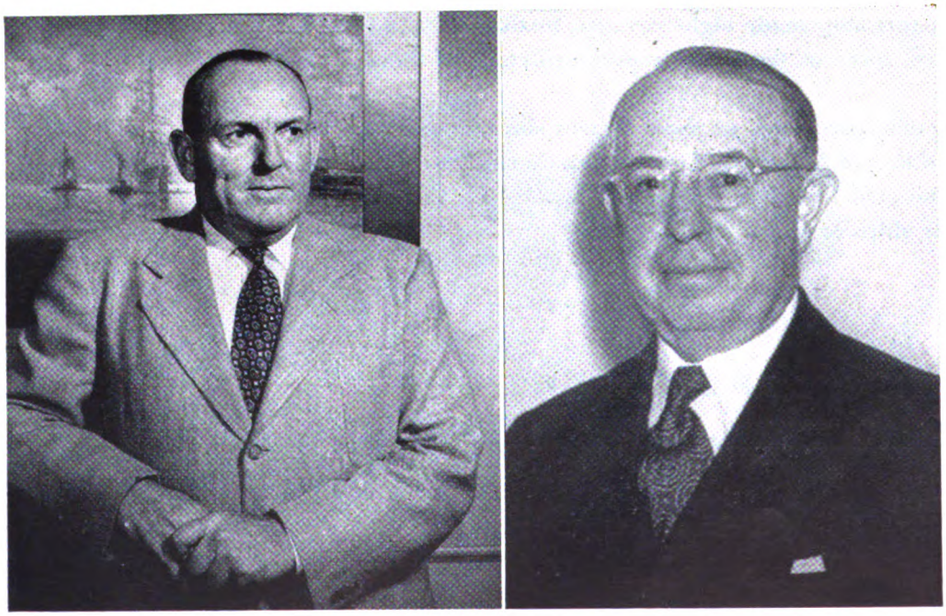
⚓ ⚓ ⚓

Grace Line Begins New Freight Service

A new Grace Line freight service between Puget Sound Ports, Portland, San Francisco, Los Angeles and Barranquilla and Maracaibo via Central America and the Canal Zone was inaugurated by the GUNNER'S KNOT.

The service will be maintained on a fortnightly basis with five C1-M-AV1 type ships. They are single screw diesel powered ships of 5800 deadweight tons and equipped with heavy lift booms. They have a cargo capacity of 238,000 cubic feet including 10,000 cubic feet of refrigerated space.

MATSON PERSONNEL CHANGES . . . RANDOLPH SEVIER, left, New Executive Vice President; and HUGH GALLAGHER, right, transferred to the Washington, D. C. office of the company.



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Eyewitnesses Log Experiences...

with RADIOMARINE'S 3.2cm 4-PURPOSE RADAR

Have been able to pick up targets in all weather conditions.

Along the Jersey Coast about 50 miles offshore had no difficulty in picking up the shoreline. Brooklyn and Coney Island were picked up at a range of 47 miles.

Picked up Mantanilla Light Whistle off the Little Bahama Bank at 26 miles, which sounds unbelievable considering the size of the target.

Picked up a contact at 8 miles and after closing on the object it was found to be a buoy which had broken from its mooring.

It is already proved that the ship has gained several days and nights with the aid of radar.

All the various pilots who had been aboard stated that this radar presents one of the best pictures they had ever seen.

While watching the radar scope, the First Mate saw two other ships on a collision course with one another, contacted the two vessels by radiotelephone and directed them to change their course, thereby avoiding a possible accident.

Rather than have the CR-101 removed from my vessel, I would be willing to pay $200 per month out of my salary to keep the equipment aboard.

Made landfalls by radar in the Baltic Sea and from port to port in Finland when not visible to the naked eye

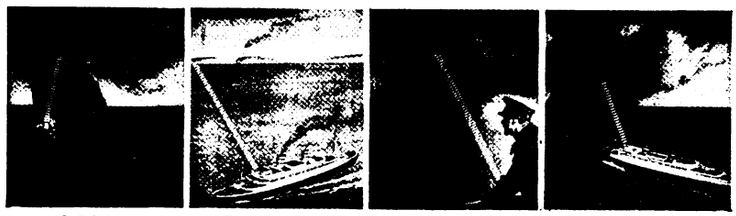
By means of radar we kept the ship on a true course, thereby saving time and oil.

Passed inside between the Shumagin Islands and the mainland, obtained excellent results with radar through this tricky passage.

Going through the English Channel — low visibility — radar used to a large extent to pick up buoys and lights that were not visible more than one mile at the most.

These are just a few of hundreds of reports on the excellent performance of Radiomarine's 3.2cm Radar. They tell of a job well done in helping to maintain faster, safer schedules in all weather conditions at sea, in harbor, in inland waters. Send for complete report, "Eyewitness Accounts of RCA Radar Performance." Write: Radiomarine Corporation of America, 16 First Street, San Francisco, California. Tel: Garfield 0673.

YOU GET ALL 4 NAVIGATIONAL AIDS WITH RADIOMARINE 3.2cm RADAR



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SHAFT ALLEY (continued) Chatter

TODD SHIPYARDS CORPORATION appoints JOHN GREEN General Superintendent of the Corporation's Bay Area ship repair operations.

Green Appointed Supt. of Todd's Bay Area Operations

Appointment of John Green as general superintendent of Todd Pacific Shipyards Corporation's Bay Area ship repair operations is announced by Philip Lemler, vice-president and general manager of the corporation there.

Green will succeed Nick Lehman, who is retiring after more than 30 years' service in the ship repair business in San Francisco with United Engineering and Todd—Pacific.

Well known in both American and foreign ship operating industries, Green has recently been manager of the marine department of McCutcheon and Sons, New York, ship joiner manufacturers. He has been identified with shipbuilding and ship repair work since the first World War, holding responsible positions in both design and production fields. During World War II, he was manager of the Tacoma Shipyard for Todd, supervising the construction of more than a hundred vessels for the Maritime Commission and the Navy, including tankers, C-1s, C-3s, and escort carriers, more popularly known as "baby flat tops."

The Todd organization recently acquired United's facilities at San Francisco and Alameda.

⚓ ⚓ ⚓

North Pacific Offices Opened By Transpacific Transportation

Transpacific Transportation Company, San Francisco, agents for the Java Pacific Line, has opened its own offices in Portland and Seattle. Formerly the company was represented in these Pacific Northwest cities by Burchard and Fisken. Archie T. Davis, Jr., formerly of the San Francisco office, is in charge at Portland as Pacific Northwest manager, and H. W. Alma, formerly with the Royal Netherlands Steamship Company, in India and the Netherlands Ministry of Transport in New York, is at Seattle as district manager. The Portland office is in the Equitable Building and the Seattle office in the Exchange Building.

⚓ ⚓ ⚓

United States Lines Repurchases AMERICA

The repurchase of the AMERICA returns the 26,314 ton liner to her original owner, The United States Lines, who has her under bareboat charter now from the Maritime Commission which acquired ownership of the vessel in 1942 when it was serving as a Navy troop transport.

John M. Franklin, president of the Lines, said the vessel was part of its program to expand its passenger fleet, which also includes the construction of a $65,000,000 superliner.

The agreement with the Commission provides that the United States Lines pay 25% of the purchase price of $7,460,000 in cash as a down payment and the balance on a 12 year mortgage.

⚓ ⚓ ⚓

$1,800,000 Modernization Program for Delta Line Ships

Mississippi Shipping Company has plans for the installation of refrigerated holds and cargo conditioning systems in six of its C1A type ships. Three of these Delta Line vessels will be equipped additionally with cargo tanks for important bulk vegetable oils.

Estimated at a cost of $1,800,000 and eight months to complete the plans call for the refrigeration of the No. 3 upper 'tween deck space in each ship which will provide for 6,300 cubic feet of refrigerated space for carrying fruits, meat and other perishable cargoes. Of even greater importance will be the installation of Cargocaire, or cargo conditioning systems, in the general cargo holds. This is a cargo protection system by controlling humidity to prevent sweating. Supply and exhaust fans will be located at opposite ends of each hold to permit ventilating the cargo spaces with outside air when weather conditions permit, or to recirculate air within the holds when the weather is not favorable.

In addition, the three ships in the West African service will be equipped with deep tanks in the No. 3 lower hold for carrying vegetable and animal oils. The space will be divided into four tanks, with a total capacity of 1,242 tons.

⚓ ⚓ ⚓

Sweetin Joins Commercial Ship Repair, Seattle

J. L. Sweetin, for the past year a consulting marine surveyor and port engineer and manufacturer's representative at Seattle, has joined Commercial Ship Repair, Seattle, to become marine superintendent, a newly created position.

Well known in the area for his practical knowledge of commercial ship operations from both the engineering and operating viewpoints, Sweetin gained his early experience with the old American Mail Line. Later in the employ of James Griffiths & Sons, Inc., he came ashore to become marine superintendent for that firm, from which position he resigned in 1947. While with the Griffiths Line he was president of the Society of Port Engineers of Puget Sound and notably active in getting that society organized. In his new position liaison duties between shipyard personnel and ship operating company officials are to be handled.

⚓ ⚓ ⚓

Marlborough Becomes Senior Surveyor for Lloyd's Register

Lloyd's Register of Shipping has promoted Eric Marlborough to the position of senior surveyor in the San Francisco office.

Marlborough joined the staff of Lloyd's in 1936 and has been stationed in London, Bristol, Marseilles, Falmouth, Greenock, Halifax, N.S., at which time he was loaned to the British Admiralty and was appointed as engineer representative at Vancouver, B.C. On completion of his war service he was appointed to the San Francisco office of Lloyd's.

His shipping experience first started when he served his apprenticeship as marine engineer at John Brown & Co., Clydebank, after which he saw duty at sea as engineer in steam and motor vessels of the New Zealand Shipping, The British Tanker Company, The City Line, and the Canadian Pacific Steamship Co.

ERIC MARLBOROUGH, promoted to Senior Surveyor in the San Francisco office of Lloyd's Register of Shipping.

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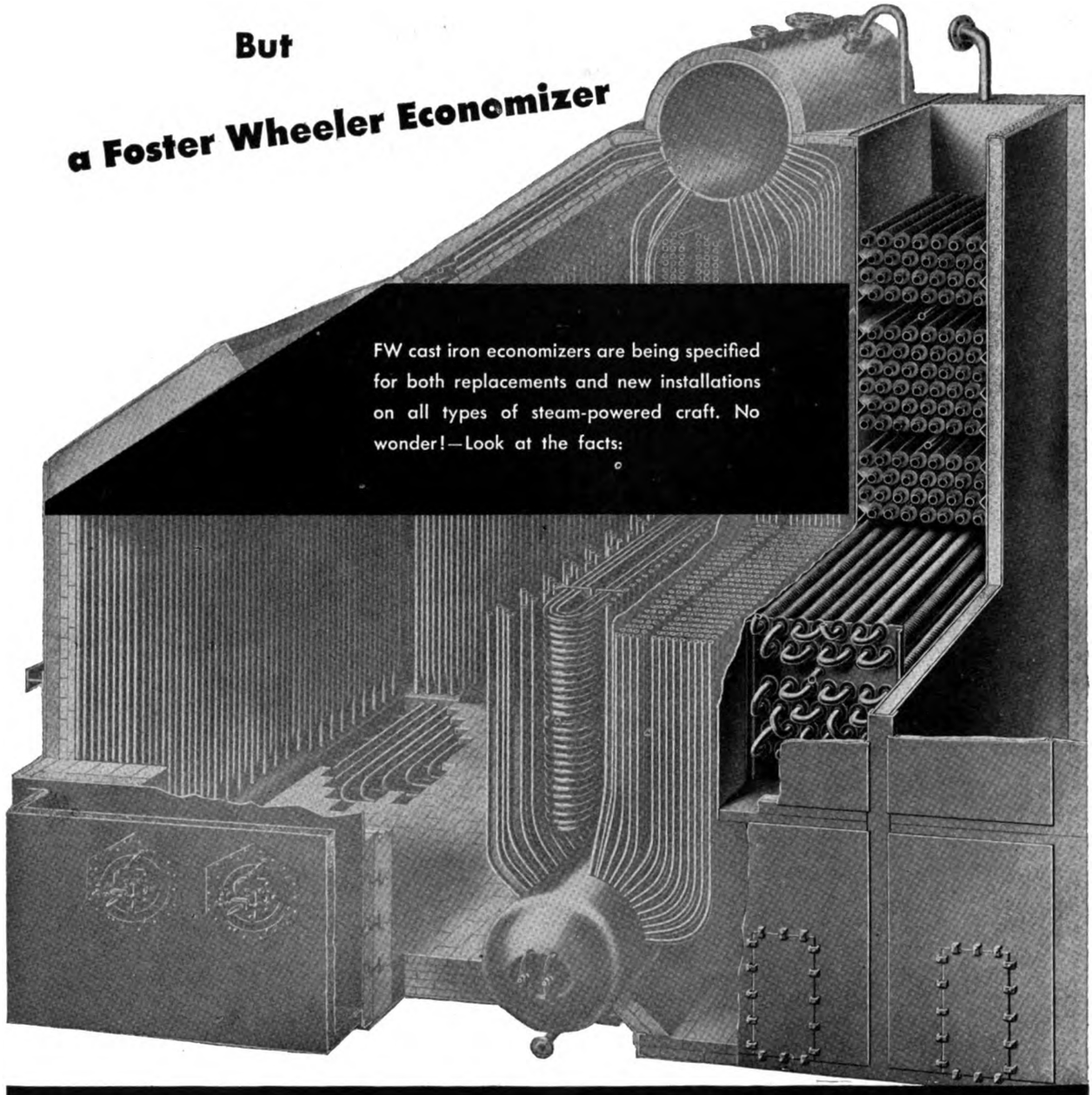
Not Just An Economizer

But

a Foster Wheeler Economizer



FW cast iron economizers are being specified for both replacements and new installations on all types of steam-powered craft. No wonder!—Look at the facts:

● **Non-corrosive**—The cast iron gilled rings resist the corrosive action of the stack gases. All exposed steel tubing and return bends are located outside the gas passage. There are no joints, welded or otherwise, in the gas zone.

● **Non-combustible**—Costly soot fires are prevented because of cast iron covering. Cast iron withstands higher temperatures than common steel and its mass prevents heat concentrations which result in dangerous soot fires.

● **Non-steaming**—FW economizers are designed with a minimum number of legs "to carry". This insures positive circulation, prevents steaming and retards oxygen corrosions.

A distinguished name in the marine field for over 50 years.

Save money and trouble now; order an FW economizer. For further particulars, write . . .

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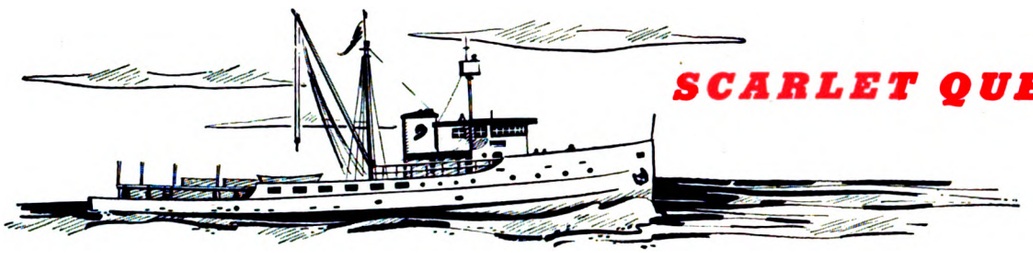
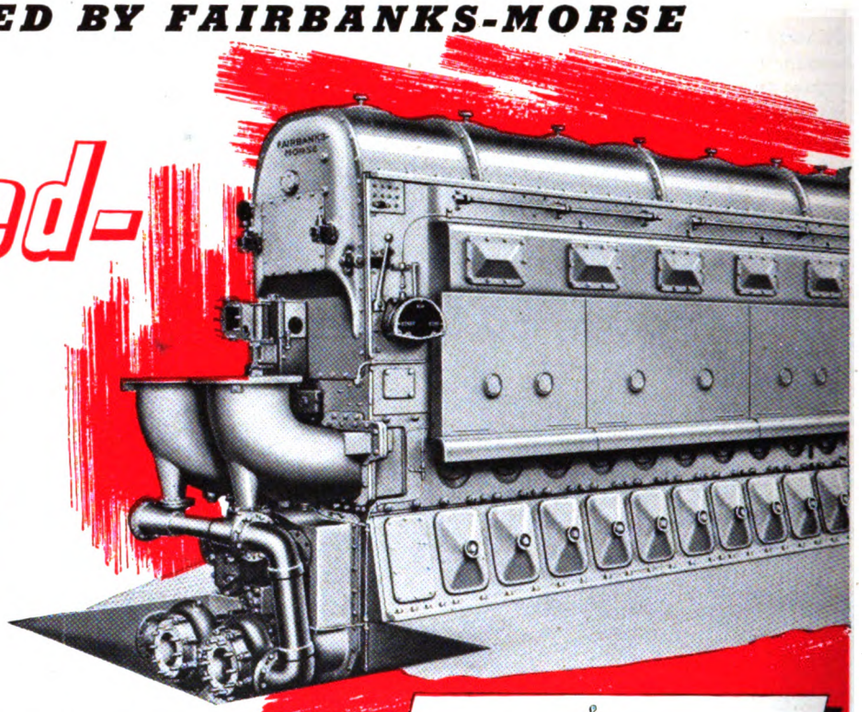


SCARLET QUEEN

POWERED BY FAIRBANKS-MORSE

Opposed-Piston Diesel



Biggest clipper in the tuna fleet, the Scarlet Queen is the last word in capacity, speed and power. Her Fairbanks-Morse Opposed-Piston Diesel delivers 1800 h. p. to make an easy 12 knots fully loaded, takes up far less space, weighs much less than any other diesel of equal horsepower. This is the ideal "big boat" diesel that offers more power per foot of floor space, simplified maintenance and long-run reliability.

When it comes to diesel engines . . .

FAIRBANKS-MORSE

A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • STOKERS • SCALES • MOTORS • GENERATORS
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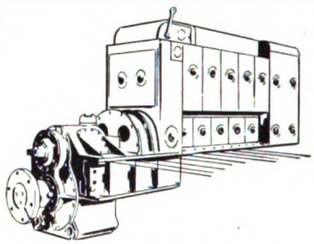

For Smaller Vessels...

The Model 31, with horsepower ranges from 175 to 480 h. p., offers many advantages . . . 2-to-1 heavy duty reduction gears to allow use of larger, more efficient propellers; more positive control; bearings that are practically indestructible.

For complete information on these and other Fairbanks-Morse Diesels, get in touch with our nearest office:

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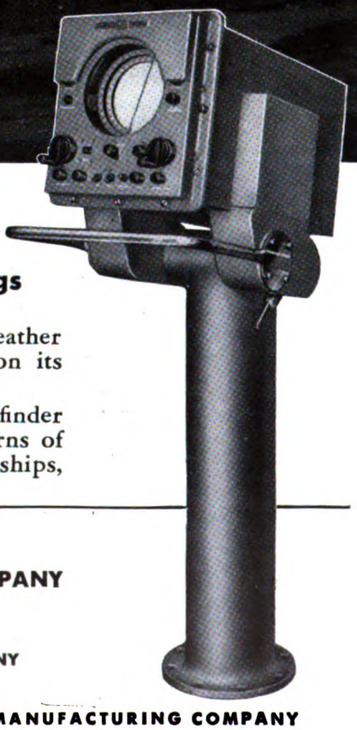

Mariners Pathfinder* Equipped S. S. Yarmouth

maintains tight "3-round trip per week schedule" despite heavy fogs

During the periods when pea soup shrouds Nova Scotia . . . and dirty weather engulfs Boston Harbor, the S. S. Yarmouth is able to keep a close schedule on its Boston-Yarmouth, Nova Scotia run during the summer.

Your ships can also navigate safely in all kinds of weather with Mariners Pathfinder radar. Mariners Pathfinder picks out buoys, other vessels and shore lines. It warns of approaching storms and obstacles that may cause disaster. Protect your valuable ships, crew and cargo by installing a Mariners Pathfinder radar on your vessels.

Raytheon gives you unbiased advice on the type best suited to your requirements—10 cm for ocean going vessels . . . 3 cm for inland lakes and rivers. Raytheon's sales and service offices are located in principal ports. They are staffed by radar specialists . . . ready to serve you day and night. Write for information.

*"Mariners Pathfinder" is the trademark of the Raytheon Manufacturing Company denoting its commercial search radar.

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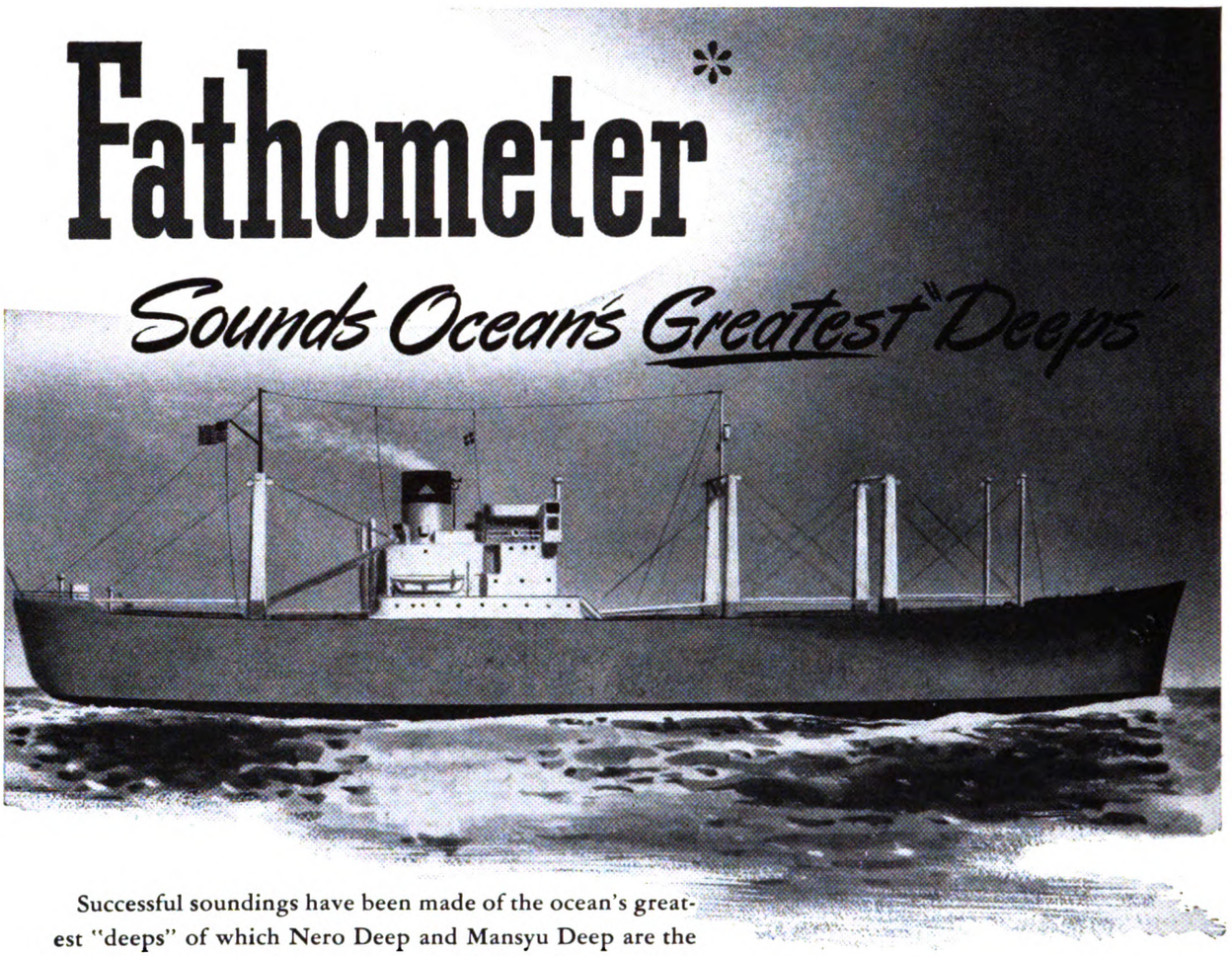
Fathometer*

Sounds Ocean's Greatest "Deeps"



Successful soundings have been made of the ocean's greatest "deeps" of which Nero Deep and Mansyu Deep are the probable extremes. Captain G. T. McCready, Commanding Officer of the U. S. S. Virgo (AKA-20) equipped with the Model NMC-1 Fathometer, reported to the Chief of the Bureau of Ships that in Lat. 11.5 N, Long. 126.1 E, in an unnamed "deep" near Samar, satisfactory soundings were obtained at 5300 fathoms!

Fathometer Proves its Reliability in all Types of Ships

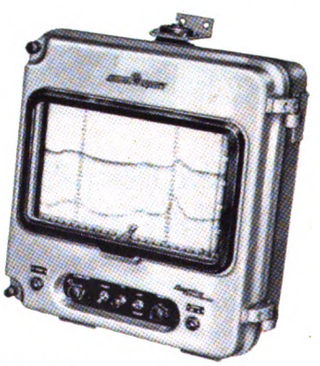
Ever since 1901, the Submarine Signal Company, originator of the world's first practical echo depth sounder, has been a leader in the development of underwater signalling and echo depth sounding. The accuracy and reliability of the Fathometer have been demonstrated again and again on ships of the United States Navy, the Merchant Marine and fishing vessels everywhere. For charting the ocean's depth, for deep sea or coastwise navigation, for commercial fishing or pleasure cruising, there is a Fathometer specially designed to meet each depth sounding need.

*Reg. U. S. Pat. Off.

SUBMARINE SIGNAL COMPANY

160 Washington Street N, Dept. 4112, Boston 14, Mass.

New Fathometer Gives Recording and Indicating



The new 1215 recorder-indicator Fathometer offers both straight-line recording and red light indication in a single unit. Provides natural undistorted chart of bottom contour . . . simple operation, wide chart paper, one minute loading, long chart life, two hour history visible at one glance. Range 250 feet or 250 fathoms.

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the LOG
OF AMERICA'S MARITIME INDUSTRIES
Shipbuilding Naval Architecture
Ship and Port Operations
Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

SEPTEMBER, 1948 Vol. 43, No. 10

Official Organ for the Port Stewards' Association of the Pacific Coast; The Society of Port Engineers, San Francisco; The Society of Port Engineers, Los Angeles; The Society of Port Engineers, Puget Sound; The Society of Port Engineers, Portland; The Society of Marine Port Engineers, New York; Steamship Purchasing Agents of San Francisco.

Editorial Features

Editorial—"Fitting Some Things Together" 31
Cargocaire Tanker System Cuts Maintenance Cost 80% 33
Disposition of U. S. Merchant Fleet 36
Washington Reporting 40
Flywheel On Liberty 42
Canada's Newest Passenger Ship 47
Operating Ideas
Damaged Stability 50
Boiler Feed Systems and Controls 51
Labor, Rates, Service, Discussed at Port Conference 56

Departments

Shaft Alley 24-26
Societies 48-49
Operating Ideas 50-54
Ports 56-57
Equipmentalk 62-67

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Fitting Some Things Together

There is a plank in the new Henry Wallace "Progressive Party" platform that calls for nationalization of the American Merchant Marine. Don't laugh that off as just another platform promise. It is serious because those who desire to weaken our shipping by eliminating all private enterprise from it have been making headway.

Let us look at several points and put them together. The "new" party convention was dominated by Communists and the platform written by Communists. That is an obvious fact to anyone who took the trouble to read the names of those running the show.

On the platform committee was Harry Bridges, a Communist "party-liner" from way back if not an actually proved member. For 14 years as head of the leftist ILWU (International Longshoreman's and Warehousemen's Union, CIO) he has employed every strategem of which he is capable to eliminate private ship operation by increasing costs. Through long strikes, "quickie" strikes, and the continual "slowdown" which is especially severe on the West Coast at this writing, Bridges has tried to force ship operators out of business. Always, of course, the purposes were to benefit union members. But it is extremely doubtful if the members, during their lifetime, will ever get back in increases what they have lost through Bridges' use of the organization in attempting to destroy private ship operation.

Another point to fit together. Last June in the closing days of Congress it appeared legislation would pass enabling private ship operators to join financially with the Maritime Commission in constructing badly needed passenger ships (i.e. troop transports). But at the last minute the CIO Maritime Committee suddenly switched from support to opposition. Handling this double-cross was a man known as a "party-liner" although to our knowledge not a proved Communist. During the last minute effort to "appease" the CIO Maritime Committee a representative of the CIO shipbuilders union was asked the alternative to cooperative private-government shipbuilding program. His answer was "nationalization." (See the lead article in The LOG for August, "Our Longe-Range Program — How it Died at Birth," for further details of this Communist inspired blocking of a shipbuilding program.)

Working on the principle of the man who said that when he saw a bird that walked like a duck and quacked like a duck he had a right to assume it was a duck, we see these objectives of the Communists:

1. The Communists do not want a strong American Merchant Marine.
2. The first step in weakening it is nationalization, for then it will be easy to repeat such blocking tactics to a badly needed shipbuilding program as was done last June before the Senate Committee for Interstate and Foreign Commerce. With private operators out of the way the Communists know how easy it is to kill programs off in committee and with no repercussions.

Since we Americans seem so slow in recognizing the program of the Communists to kill off the American Merchant Marine perhaps it is necessary to point out why they desire its elimination. Isn't it obvious that Russia (which controls all Communists and their thinking) doesn't want the United States strong in any arm of self-defense, for she knows only too well the major role played by America's ships in defeating Germany and Japan.

Communist attacks on American shipping and private operators are nothing new, but the danger of their succeeding in badly weakening our merchant marine is far greater than ever before. The American shipping operators must lead the fight to save American shipping as an arm of self-defense. They cannot expect the Army and Navy to do the entire job of making the American people aware of the necessity for a still stronger fleet of merchant ships.

⚓ ⚓ ⚓

New Marine Diesel Book Available

"Marine Diesel Standard Practices," a new 182-page practical manual has just been published by the Diesel Engine Manufacturers Association of One North LaSalle Street, Chicago 2, Illinois. Price is $5.00 per copy.

Larger and more comprehensive in scope than the "Marine Diesel Engine Standards," published by the association in 1940, the new volume will more adequately serve ship operators, ship builders and naval architects, for whom it was primarily prepared.

The work is divided into nineteen chapters plus an appendix of useful information. The chapters cover: Definitions; Standard Performances and Equipment; Classification and Marine Inspection; Diesel Engines in Ships; Diesel Engines in Floating Dredges; Foundations and Seatings; Machinery and Engine Room Arrangements.

Propellers; Vibrations; Governors and Speed Control; Fuel Oil Systems; Lubricating Oil Systems; Cooling Water Systems; Starting Systems; Air-Intake and Exhaust Systems; Scavenging and Supercharging; Fuel Oil Characteristics and General Specifications; Lubricating Oil Characteristics and General Specifications; Operation and Maintenance; and the Appendix of ship and Diesel data.

The manual is illustrated by more than forty diagrams and charts. All operators of marine Diesel engines will find "Marine Diesel Standard Practices" useful to have at hand. Copies may be obtained from the association.

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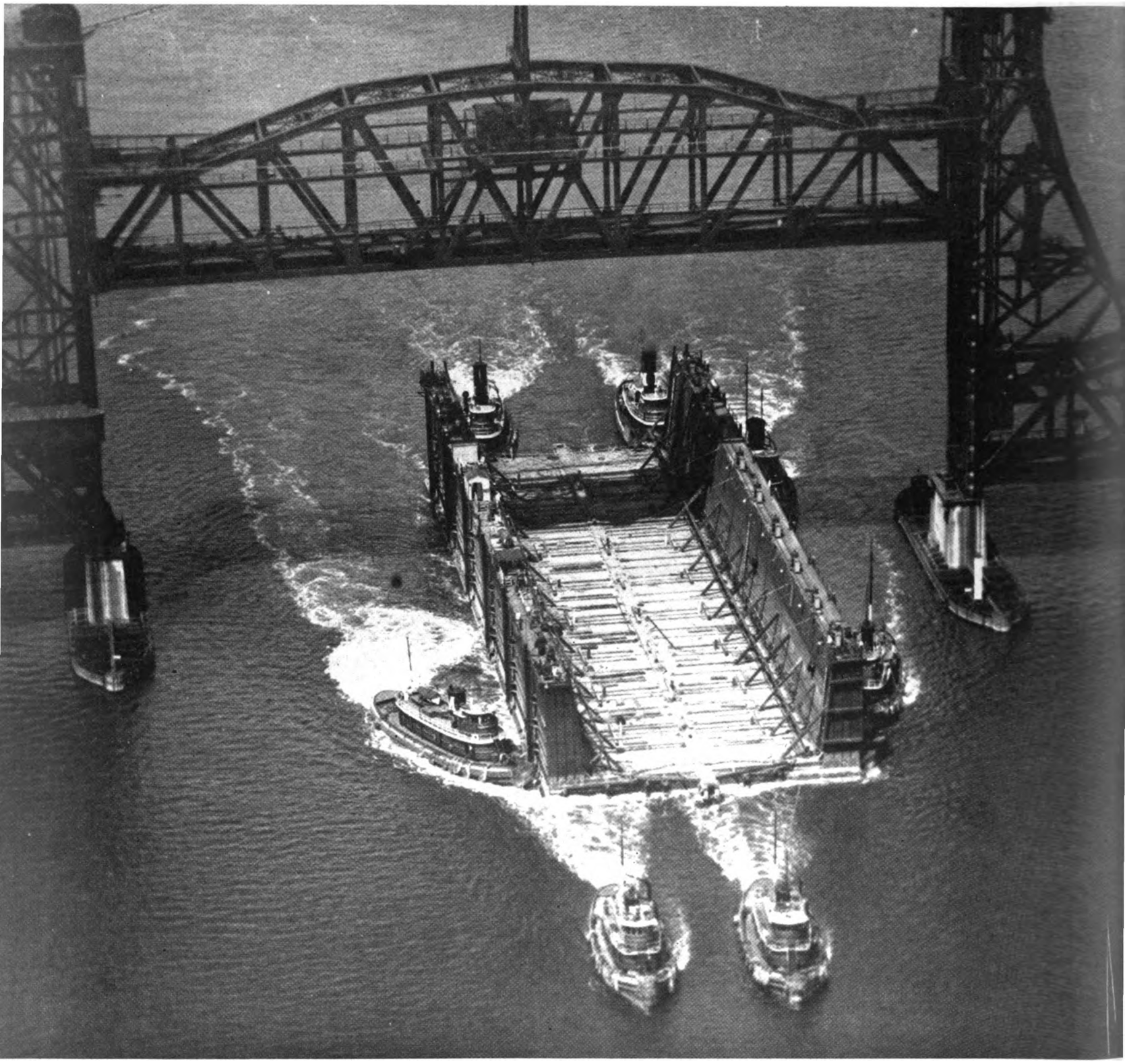

New York to the Gulf . . .

MORAN MAKES A LONG HAUL with an 8,500-ton floating dry dock purchased by the Waterman Steamship Corporation for its subsidiary, Gulf Shipbuilding Corp. at Chickasaw, Alabama, six miles north of Mobile. The tow left Federal Shipbuilding and Dry Dock Company yard at Kearny, N. J., on July 12 and arrived in Mobile after its 1700 mile journey on August 1, just 48 hours ahead of schedule.

Picture above shows the mammoth dock passing under the Central Railroad of New Jersey mainline bridge across Newark Bay. The tow was turned over to the GAY MORAN and the MARION MORAN, two 1900-horsepower Diesel-electric seagoing tugs, for the haul to Mobile. The Mobile channel was closed for twelve hours while the dock was towed in.

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CARGOCAIRE TANKER SYSTEM CUTS MAINTENANCE COSTS 80%

Savings estimated at from $50,000 to $70,000 per tanker annually can be earned by dehumidifying tanks to prevent corrosion from sweat and chemical action. First installation aboard tanker PETERSBURG operated by Keystone Shipping Co.

A new application of Cargocaire, a dehumidified ventilating system, which has proven its value in protecting dry cargoes from damaging moisture, has been developed for tankers, which it is expected will cut tank maintenance costs due to corrosion by better than 80%.

The patented system of tankship dehumidification was developed by Cargocaire Engineering Corporation of New York to serve the following purposes:

(a) To prevent contamination of liquid cargo from condensation of moisture within the tank.

(b) To prevent corrosion of structure by maintaining atmospheric condition of low relative humidity.

This is accomplished by automatically maintaining a slight pressure of dry air above the cargo in the tanks while in storage or transit, when loading, discharging, and when tank is empty.

The new system has been tested aboard the T-2 tanker PETERSBURG operated by the Keystone Shipping Company of Philadelphia and has proven highly successful. The years of operating experience of Keystone was invaluable in designing the system in a practical manner to fit tanker operating procedure.

Navy To Install Systems

Plans are now being prepared for installations that have been authorized to be made aboard the U. S. Navy oilers AOG NOXUBEE and the AO NECHES for full-scale quantitative tests on the retarding of corrosion. The Navy's good results with dehumidification in its "laid-up mothball fleet" have encouraged it in its belief that it will be of great value in tankers in active commission.

The experimental installation of the new Cargocaire unit aboard the tanker PETERSBURG, showed that the tank could be completely dried down in six hours (see cut). Keystone's technical staff pioneered the trial unit installed aboard the tanker at the Merrill-Stevens Dry Dock & Repair Co. yard in Jacksonville, Florida.

The equipment was started in operation at noon on January 31, 1948, and is still operating with the efficiency which was immediately evident. The unit, which dehumidified the air in No. 3 port tank, completely dried the tank within six hours after starting, with ballast in No. 3 center tank. Ballast was kept in No. 3 center throughout the southbound voyage to Lake Charles and during this time, No. 3 port showed no sign of sweating, and according to Captain Sachs, was "dry as the inside of a flour barrel."

The humidity in the dehumidified tank averaged less than 50% and did not sweat despite the fact that No. 3 center contained cold ballast. Other tanks, including No. 3 starboard, continued to sweat throughout the voyage with a minimum relative humidity of 80% to 90%.

It is well known that cargo tanks subjected to corrosive action of salt water and weak acids corrode very rapidly. There are but few coatings or paints, including lacquers, that can be applied to the interior of such tanks. To our knowledge, no paint or coatings as yet have been successful in permanently preventing corrosion in cargo oil tanks and are quite costly in their initial application and frequent renewal.

After transporting 100 cargoes, a large tanker will be in need of extensive structural renewals. The life in years would depend on the length of voyages and would equal 7 to 8 years in coastwise trade or 12 or 13 years trans-Atlantic.

One extreme case of hull corrosion in gasoline service was noted where a loss of 32 to 56% of thickness occurred on all members; including decks and side shell in 7½ years. The corrosion rate of sour crude carriers is quite appreciable, although not nearly so great as for gasoline. The rate of corrosion is much less during the first year or two than subsequently.

From the above, it might be concluded that the accumulation of corrosion products saturated with salt water or corrosive decomposition products act to accelerate the rate of corrosion—a conclusion substantiated by much available data. However, in the total absence of water, the corrosion rate falls to zero.

Cargocaire Reduces Corrosion 80%

According to figures supplied by one tanker company, overtime for the crew to clean rust from tanks amounts to from $5,000 to $10,000 annually. It costs another $50,000 annually to amortize for the major overhauls required of clean cargo tankers after approximately 8-11 years of age for repairs and replacement of bulkheads, piping and strength members weakened by corrosion. According to this company, at least ten days per year are lost in shipyards due to rust alone, which adds to the cost another $20,000 to $30,000, depending upon the demurrage value of the ship. Thus it is estimated that each tanker costs in the neighborhood of $85,000 annually over the entire amortization period to keep it in operation just for corrosion maintenance alone.

Cargocaire installations for tankers should reduce by at least 80% through corrosion preventing dehumidified air supplied to the tanks, saving $50,000 to $70,000 annually per tanker on the basis of the above costs. The time saved in gas freeing, cleaning, Butterworthing, etc., consequently speeds turnaround. The positive ventilating system eliminates the need for less effective windsails, auxiliary blowers, etc.

Preventive Protection

With the Cargocaire system the ship's

This Is How Cargocaire Tanker System Works:

Results are accomplished by automatically maintaining dehumidified low Dewpoint° air, or if desired, inert flue gases, above the cargo in the tanks when:

a. Loading. The dried air and gases in the tanks are displaced by the cargo upward and overboard through existing vent systems preventing entrance of damp air.

b. In storage or transit. A dehumidified-air main constantly under pressure ensures only dried air supplied to tanks.

c. Discharging. The dry air (or inert gas) main from the cargocaire unit supplies dehumidified air under pressure to replace the cargo as it is pumped from the tanks.

d. Empty. After discharging or after purging following Butterworthing or ballasting, the tanks are kept dry constantly by dried air under slight pressure. No inboard air leaks can introduce moisture.

When drying a wet tank or during gas-freeing, dried air can be introduced through ship's piping to the tank bottoms. Ventilating upward to the ship's vent system insures faster and surer results.

Any excess pressure is relieved through ship's relief valves.

Reduction of pressure in dry air main starts up cargocaire unit which operates until pressure is restored.

This system can be used for the distribution of inert gas by installing a flue gas scrubber and cooler with suitable boiler uptake connections.

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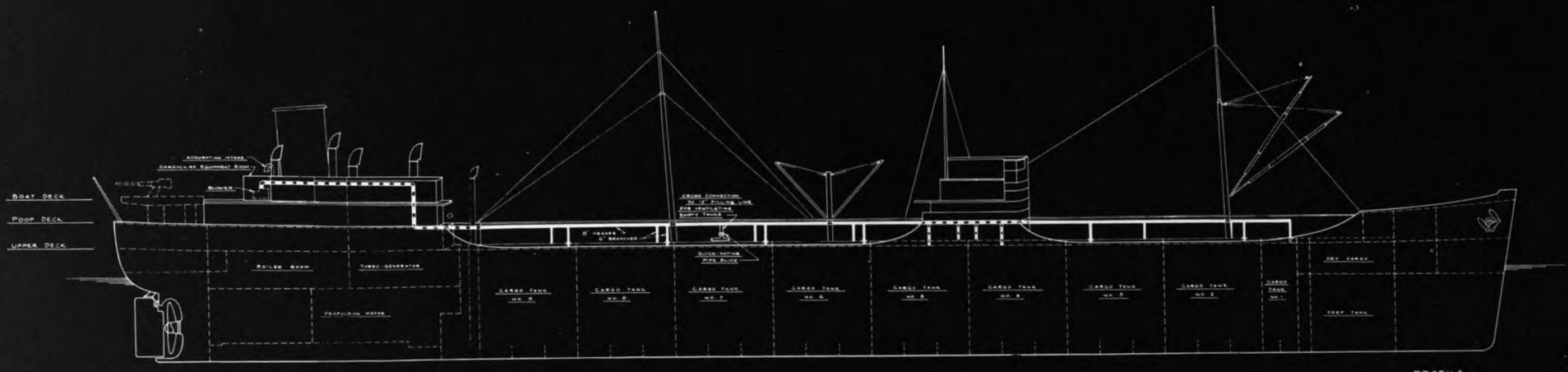
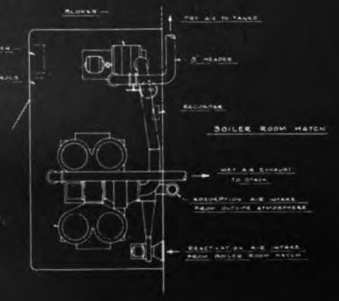
DEHUMIDIFIED VENTILATION SYSTEM FOR TANKER



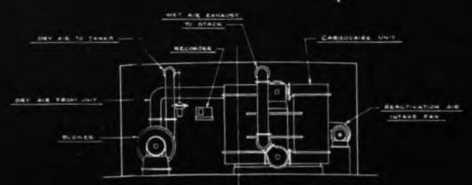
PROFILE

BOAT DECK

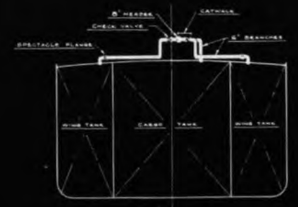
UPPER DECK



PLAN
CARGOCAIRE EQUIPMENT ROOM



ELEVATION
LOOKING FWD.
CARGOCAIRE EQUIPMENT ROOM



SECTION
DRY AIR PIPING TO CARGO TANKS

LEGEND

CARGOCAIRE ENGINEERING CORP.	
NEW YORK, N.Y.	AMESBURY, MASS.
DEHUMIDIFIED VENTILATION SYSTEM FOR TANKER	
DRAWN [illegible] 11/45 SCALE 1/8"=1'-0"	DWG. NO. NY-2-E
CHECKED	
APPROVED	

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tanks are protected as well as the cargo. It retards rust that is caused by moisture; it also retards the formation of weak acids that are caused by a combination of sulphur compounds, hygroscopic salts and water. (Particularly in sour-crudes and cargoes with high sulphur content).

Contamination of special cargoes such as alcohol, lube oil, acetone, etc., by tank sweating while en route will be eliminated by the Cargocaire system. Further, in the preparation for carriage of lube oils, the Cargocaire system will materially expedite the drying of tanks. The rapid circulation of dehumidified air through a tank will not only dry the tank quicker, but better and cheaper than hand drying.

How Cargocaire Functions Aboard Tankers

The Cargocaire Dehumidified Ventilating System automatically maintains dehumidified low dewpoint air, or if desired, dried inert flue gases, above the tanks (a) when loading, (b) when discharging, (c) in storage or transit, (d) when empty after discharging. This is accomplished in the following manner:

(a) Loading: the dried air and gases in the tanks are displaced by cargo upward and overboard through existing vent systems, preventing the entrance of damp air.

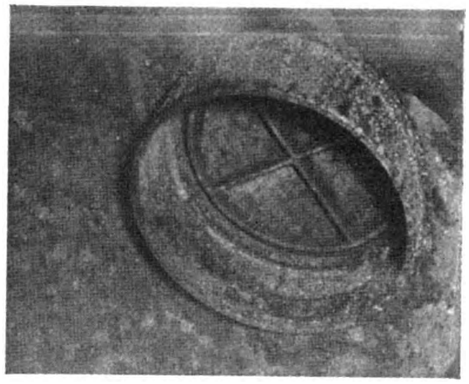
(b) In storage or transit: a dehumidified air main constantly under pressure ensures only dried air supplied to tanks.

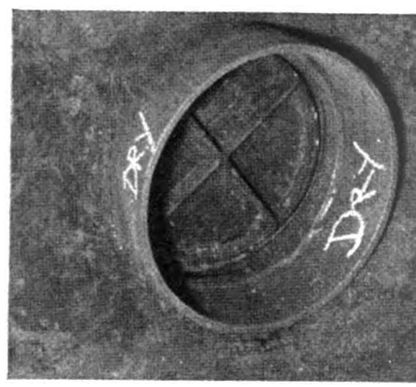
(c) Discharging: the dry air (or inert gas) main from the Cargocaire unit supplies dehumidified air under pressure to replace the cargo as it is pumped from the tanks.

(d) Empty: After discharging or after purging, following Butterworthing or ballasting the tanks are kept dry constantly by dried air under slight pressure. No inboard air leaks can introduce moisture. If at any time the pressure range in the tanks, either positive or negative, exceeds set limits, the existing pressure-vacuum relief valves permit breathing through the existing vent system.

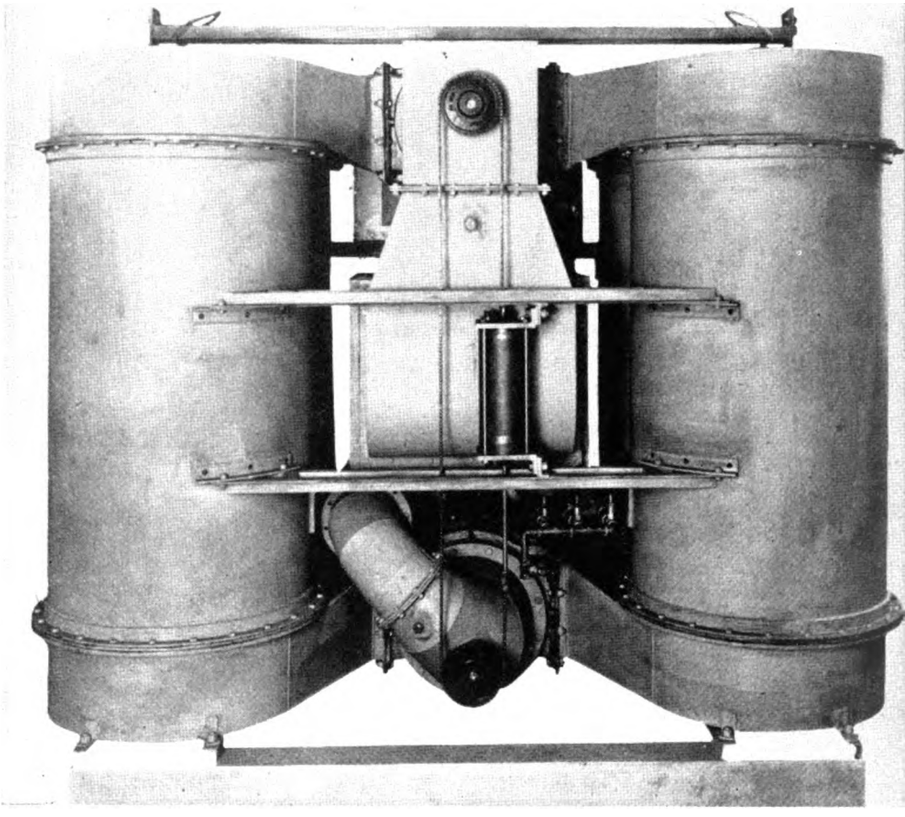
When drying a wet tank or gas-free-

(Continued on Page 58)



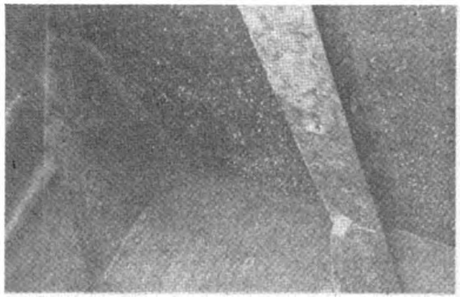


CONTRAST . . . after six hours of operation the Cargocaire dehumidified tank of the Keystone tanker PETERSBURG was dry enough to write on with chalk, while the opposite tank was still heavy with moisture. Humidity in dried tank was below 50% — in untreated tank over 80%.

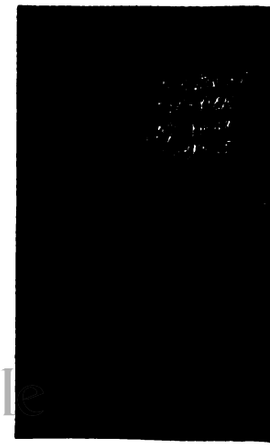


CARGOCAIRE TANKER UNIT . . . shown in this cut is capable of dehumidifying all tanks of a T2 tanker. The equipment has a cubic measurement of 8′ x 9′ x 7′. The two large cylinders are the Cargocaire drying units through which air is forced by blowers into the tanks.

TOUGH SPOTS TO GET DRY . . . and yet Cargocaire tanker system dried them so thoroughly within six hours that chalk could be used to write on them. The pictures show: Upper left, NUMBER 3 STARBOARD TANK used for comparison, note heavy sweating on tank overhead. Both tanks (No. 3 starboard and No. 3 port) were in the same wet condition when the test was started, with ballast in No. 3 center tank.



Upper right, No. 3 PORT TANK, in contrast to No. 3 starboard, after six hours of dehumidification was entirely dried, so much so that chalk would write on the suction valves in the after corner of the tank, usually one of the most difficult areas to dry.



Lower left, PORT TANK protected by Cargocaire dehumidification. A scaled test area is indicated by chalk marks. Note the depth of the old scale. After the first voyage the comparison tank showed evidences of new rust while the treated tank remained clean.

Lower center, chipped surface of test area in port tank is clean and dry while starboard tank was sweating heavily as indicated in picture above.

Lower right, cleaned area on bulkhead is dry with cold ballast water in adjoining center tank. Streaks are salt from salt brine which leaked from heavy rust above test area. Cleaned surface dries much faster than rusted surface. Note that the bottom of the tank, usually mucky, is dry enough to take chalk writing.

Photos by G. Doering, Third Officer, tanker, PETERSBURG.

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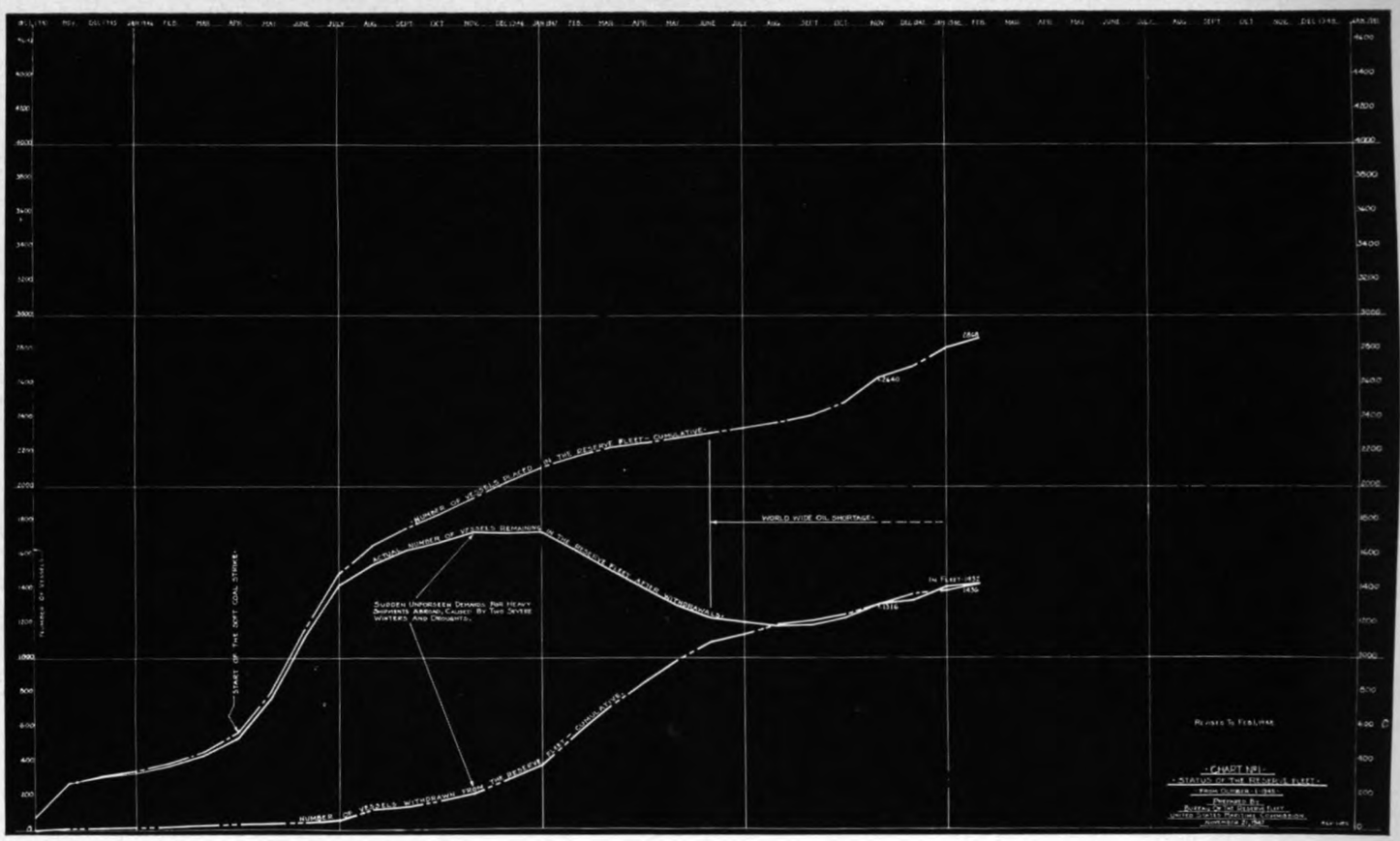
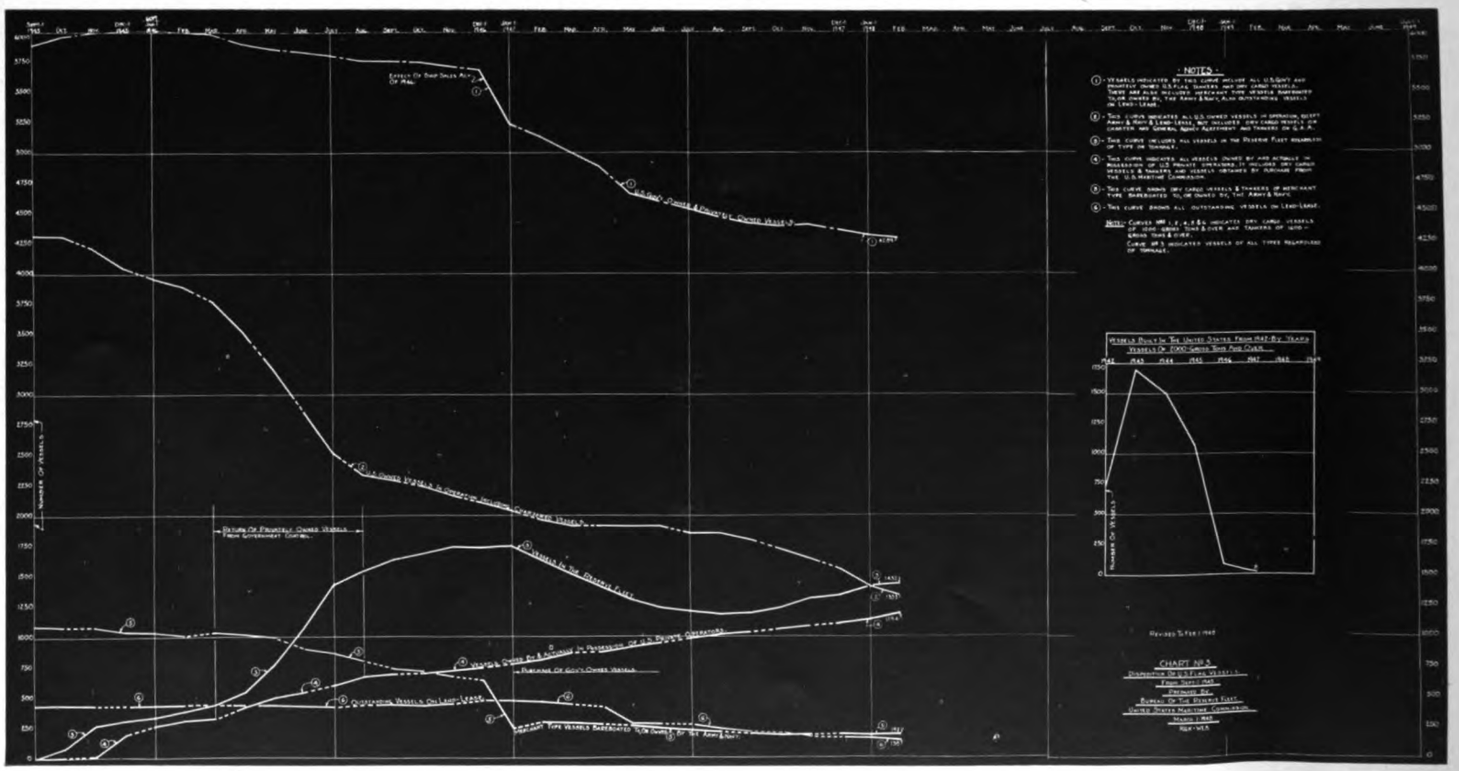


SHIFTING COMPOSITION OF THE RESERVE FLEET

DISPOSITION OF U. S. MERCHANT FLEET

SHIFTING COMPOSITION OF THE ACTIVE FLEET



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LOG REPORT ON THE

RESERVE FLEET

Analysis of our reserve fleet problems and progress prepared by the Maritime Commission for The LOG

On VJ-Day, September 2, 1945, the U. S. Merchant Marine was composed of 5,849 ocean-going vessels of all types. By January 1, 1946 this number had risen to 6,019 vessels due to the delivery of vessels which were too near completion to have been canceled when hostilities ceased.

From January 1, 1939 to September 1, 1946 there were 5,243 tankers and dry cargo vessels built and delivered by shipyards in the United States. These vessels had a cargo carrying capacity of approximately fifty million tons. It took over twenty million tons of steel to build them. Most of these vessels were constructed with Government money. Therefore, every taxpayer should have a vital interest in knowing about the disposition and preservation of his property.

The question must be on many laymen's minds, "What has happened to all of the merchant vessels built during World War II?"

Between September 2, 1945 and March 1, 1948 the disposition of U. S. merchant vessels of 1,000 gross tons and over is shown in the accompanying table.

In June 1943, after the military authorities had decided that they could go all out on a full scale offensive, and after the Maritime Commission was assured by actual production performance that its objective of the completion and delivery of five ships a day was being achieved, the staff of the Maritime Commission was directed to start planning what should be done about the laying-up of surplus vessels when the military activities no longer required them. It was anticipated at that time that the war would end abruptly and that the Government would suddenly have many idle vessels on its hands. It was obvious, from a similar experience after World War I, that a reserve fleet would be established to hold a large number of these vessels for use in any future national emergency. It was also apparent at the outset that the magnitude of the orderly establishment and maintenance of a reserve fleet would be second only to the tremendous operations necessary to build such vessels.

Selection and Development of Reserve Fleet Sites

In July 1945, the Maritime Commission delegated to its Shipyard Disposal Committee the task of selecting sites for the laying-up of surplus merchant vessels. This was a sizable task as it necessitated engineering surveys, scientific laboratory tests as to acidity and salinity of water and the investigation of multitudinous other factors. The principal factors considered in the selection of sites were as follows:

(a) Location of sites to be below the ice belt.

(b) Location to be reasonably free from violent storms and other adverse weather conditions.

(c) Sites to be reasonably close to trade routes, transportation and shipyard facilities.

(d) Water to be fresh, or with low salt content and to be free of destructive agents such as acids, corrosion producing refuse from manufacturing plants, etc.

(e) Depth of water in anchorage, entrances and approaches.

(f) Locations to be given strategic considerations.

(g) Expenditure to be reasonable.

Sites were considered at Gatun Lake, Panama, on the Great Lakes and on the Atlantic, Gulf and Pacific Coasts. The survey of sites included a study of the necessary utilities, available labor and supervision, tugboat facilities, etc. When this survey was completed, it developed that there were only a few possible sites in the United States which fulfilled the necessary requirements.

The Commission's staff enlisted the aid of the Army Engineers in surveying sites and mooring arrangements and to supervise the building of piers, shore stations and other facilities.

Prior to VJ-Day the Commission's staff had done a large amount of preliminary work on the selection of sites. On October 25, 1945, the Maritime Commission set up and organized the Reserve Fleet Division. By this time surplus and battle damaged merchant vessels had started coming in for lay-up. Previously, the Maritime Commission's staff had designated several of the World War I reserve fleet sites to be used as temporary anchorages where the surplus vessels could be moored until the permanent sites had been prepared and until the disposal of such vessels was determined by the Congress.

Ship Sales Act Establishes Reserve

On March 8, 1946, the President approved the Ship Sales Act of 1946 which authorized the sale or charter of surplus vessels and, Section 11 of this Act formally authorized the National Defense Reserve Fleet as follows:

"Sec. 11. (a) The Commission shall place in a National Defense Reserve (1) such vessels owned by it as, after consultation with the Secretary of War and the Secretary of the Navy, it deems should be retained for the national defense, and (2) all vessels owned by it on December 31, 1947, for the sale of which a contract has not been made by that time, except those determined by the Commission to be of insufficient value for commercial and national defense purposes to warrant their maintenance and preservation, and except those vessels, the contracts for the

JAMES RIVER FLEET — Part of reserved fleet of merchant vessels in James River, Hampton Roads, Virginia, December, 1945.

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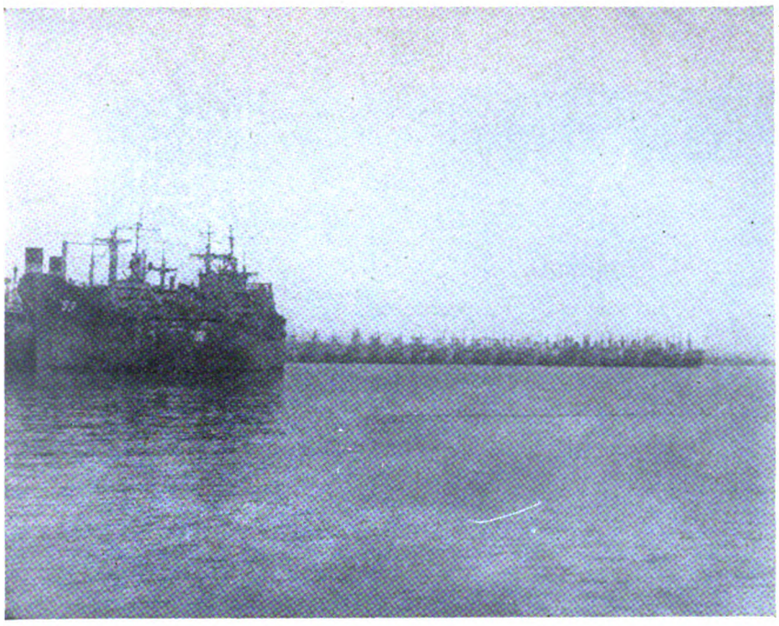
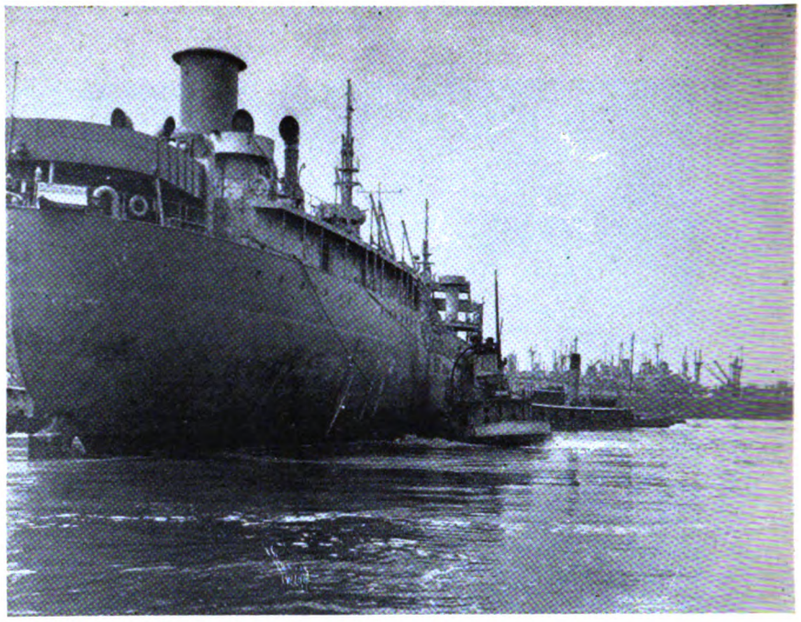


ANCHORAGE OF TRANSPORTS in James River—part of the Reserve Fleet.



TANKER NUDGED TO ANCHORAGE—Small harbor tugs ease the tanker MISSION SAN LUIS REY to her assigned position in the James River, Virginia, Temporary Reserve Fleet of the U. S. Maritime Commission. Other members of the Fleet are seen in the background.

construction of which are made after September 2, 1945, under the provisions of the Merchant Marine Act, 1936, as amended. A vessel under charter on December 31, 1947, shall not be placed in the reserve until the termination of such charter. Unless otherwise provided for by law, all vessels placed in such reserve shall be preserved and maintained by the Commission for the purpose of national defense. A vessel placed in such reserve shall in no case be used for commercial operation, except that any such vessel may be used during any period in which vessels may be requisitioned under Section 902 of the Merchant Marine Act, 1936, as amended." etc.

The Ship Sales Act 1946 has twice been amended to extend the time of domestic sales and charters to March 1, 1949.

Reserve Fleet Locations

The enactment of the Ship Sales Act 1946 gave authority to establish reserve fleet bases and in consideration of the factors given above, bases were finally established and built at the following sites:

Hudson River, N. Y.	Temporary
James River, Va.	Permanent
Wilmington, N. C.	Permanent
Brunswick, Ga.	Temporary
Mobile, Ala.	Permanent
Beaumont, Texas	Permanent
Suisun Bay, Calif.	Permanent
Astoria, Ore.	Temporary
Olympia, Wash.	Temporary

After the enactment of the Ship Sales Act of 1946, it was found expedient to continue the operation of some of the temporary fleet sites until the expiration of that Act in order to preclude expensive towing costs to permanent sites for vessels held in temporary "ready status" or for vessels which might be sold for scrap or for operation. These temporary sites have more than paid for themselves.

Organization of the Reserve Fleet

The magnitude of the operation of the fleet sites can be visualized by one of the necessary phases of this large undertaking. For instance, from September 1, 1945 to January 1, 1948 the following ship movements took place at the nine fleet sites:

Vessels entered	2,747
Vessels withdrawn	1,379
Intra-fleet movements	1,089
TOTAL	5,215

Thus, over 5,000 vessels have been handled into, out of and within the fleets with a negligible amount of damage. This commendable feat has been made possible by the fact that the Reserve Fleet Division has selected able and experienced seagoing licensed personnel who have successfully held positions of responsibility in the marine field.

Each fleet site is managed by a fleet superintendent who in turn has under him an assistant fleet superintendent, a fleet captain and a fleet engineer. All of these men in each fleet are licensed masters or chief engineers and many of them have had considerable experience on naval as well as merchant vessels. The preservation, maintenance and operation of electrical equipment in each fleet is under the supervision of a fleet electrician. These are the type of men who have charge of the preservation of the vessels at the fleet sites.

TABLE I

Approved for sale to foreigners	1,141	
Sold for scrap (domestic)	227	
Lost	36	
U. S. Government owned in operation (chartered)	1,333	
U. S. privately owned and operated	1,194	
Outstanding vessels on Lend-Lease	138	
Chartered to and owned by Army and Navy	192	
Vessels transferred to foreign registry	340	
Number of vessels in the Reserve Fleet	1,418	(as of 3/1/48)
TOTAL	6,019	

Preparation of Vessels

When a vessel returns from charter and is designated to go into the Reserve Fleet, the following procedure is followed before the vessel is delivered fleetside:

(a) A joint inventory is made by representatives of the Maritime Comsion and former charterer.
(b) The vessel is redelivered by the charterer to the Bureau of Operations of the Maritime Commission.
(c) The Bureau of Operations then employs an experienced steamship operator to take custody of the vessel under a General Agency Agreement.
(d) The vessel is then stripped of certain specified perishable and expendable items which are declared surplus and are sold. Navigating instruments are stored for future use and lifeboats and gear are stowed below deck.
(e) The operator then hires tugs and riding crew to deliver the vessel fleetside.
(f) The vessel is then physically taken by the Reserve Fleet Bureau tugs at fleetside.

When the vessels first began entering the Reserve Fleet, military operations had just ceased. Some of the vessels the crews had left immediately, and those vessels were in a state of disorder. It required a large amount of work to bring order out of chaos before preservation work could be started.

With the perfection of system and organization, vessels now coming into the Reserve Fleet are in an acceptable sanitary condition. However, there are still vessels in the Reserve Fleet which had been damaged in battle or had run afoul

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of mines, or which had been in collision. Many of these vessels have not been repaired.

Research in Preservation Methods

Prior to the establishment of sites, the Commission staff, in collaboration with Government laboratories, commercial laboratories and some of the leading universities, had been experimenting with methods of preservation for the underwater bodies of the vessels, the exterior and interior of the hulls and the preservation of machinery. While these laboratory tests were being conducted, machinery manufacturers were consulted for their suggestions as to improvement of proposed preservation methods. The methods finally adopted were the result of investigation by the laboratories, advice from machinery manufacturers and twenty-five years' experience with the World War I Reserve Fleet.

Vessels Enter and Leave Fleet in Volume

Before VJ-Day, vessels started to arrive at the reserve fleet bases, and in March 1946 vessels were arriving at the bases in volume (See Figure 2) due partially to the start of the soft coal strike but more particularly to the tremendous drop in cargoes for overseas military needs. The expense of keeping vessels in port fully manned and the shortage of piers for the disembarkation of returning troops resulted in rushing idle vessels to the reserve fleets at a rapid rate.

The peak of vessels entering the reserve fleets was reached in January 1947 when there were 1,738 vessels in the fleets. Then sudden demands for heavy shipments abroad began. These demands were caused by severe winters and droughts in Europe and a change in the Russian foreign policy. These factors, together with the world oil shortage and the effects of the Ship Sales Act, plus the return of vessels to former owners, resulted in a heavy withdrawal of vessels from the inactive fleet. By August 1, 1947 the number of vessels in the fleets had dropped to less than 1,200. In September 1947 the effect of ships sold foreign and the upswing in foreign shipbuilding began to be felt. The vessels of foreign maritime nations began carrying more of the available cargoes and consequently vessels previously chartered to U. S. operators began coming back into the inactive reserve fleet. On February 1, 1948 vessels in the fleets had again risen to 1,432.

During all of these months the Reserve Fleet Bureau was endeavoring to organize and establish methods and systems of preservation, and, above all, to obtain enough money to protect the taxpayers' property and carry out the mandate of Section 11 of the Ship Sales Act of 1946. Further, it was necessary to recruit and train competent men for the supervisory and operational staff.

To Lay-up or Not to Lay-up

In many cases it was difficult to determine whether or not it would be prudent to spend funds on the lay-up of vessels which might be sold or chartered within a short period of time. Every vessel which entered the fleet was available for sale to citizens of the United States. A number of these vessels were available for sale to foreigners. A large number of vessels were withdrawn from the fleet in 1947 to handle the tremendous grain and coal movement to Europe. There was no assurance that any specific vessel would remain permanently in the fleet.

Many, unfamiliar with these circumstances, were critical of the fact that some expense had been incurred in certain preservation measures that were taken on vessels that were later sold or otherwise returned to operation while others, if not the same parties, would (almost at the same time) be critical of the fact that the vessels were not being completely laid-up and preserved immediately upon arrival at the fleets.

In view of these conditions, the Bureau promptly adopted the policy of performing preservation work on vessels entering the fleets only to the extent that certain parts of a vessel and its machinery would be vulnerable to early deterioration. Further work on such a vessel is deferred until the period of time out of service extends to a point where additional parts of the vessel require attention to forestall deterioration. At the present time, preservation of all vessels in the fleets has been accomplished to an average of about fifty-five percent of completion.

Eventual Size of the Reserve Fleet

As of March 5, 1948 there were 2,604 vessels remaining under the control of the Maritime Commission as follows:

In the Reserve Fleet	1,419
On charter to U. S. operators	1,018
Under General Agency Agreement preparing to enter fleets	50
To be returned from Japanese service	25
To be returned from Lend-Lease	53
To be returned from Navy	14
To be returned from Army	25
TOTAL	2,604

Of the above total there will undoubtedly be a number of vessels withdrawn and sold for scrap and operation. However, it is estimated that after Ship Sales Act of 1946 expires, the permanent national defense reserve fleet will be composed of 2,000 or more vessels.

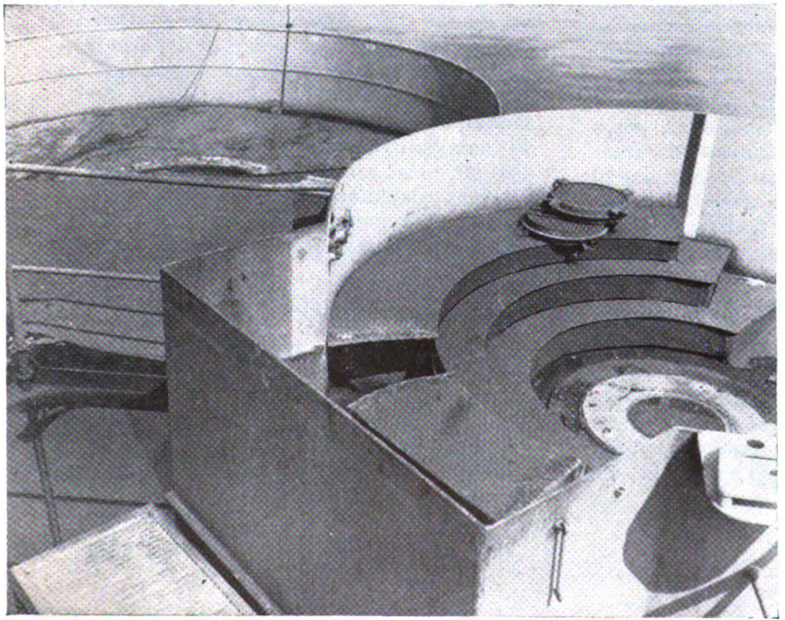
Cost of Maintaining Reserve Fleet as Compared to Replacement Cost of Vessels

There were, as of March 1, 1948, 1,418 vessels in the reserve fleets. The average construction cost of these vessels was $2,250,000 each, making the total over-all replacement cost something over three billion dollars. For the fiscal year 1948-1949 the Maritime Commission is requesting a budget of approximately one-fourth of one percent of the replacement cost of these vessels for the preservation and maintenance of all vessels contemplated to be in the reserve fleets during this fiscal period.

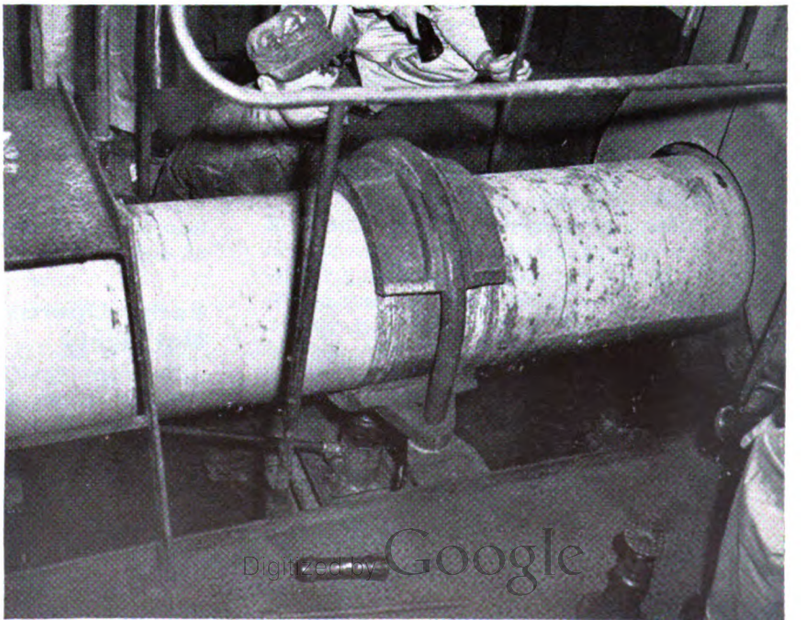
This operating budget is predicated upon the employment of approximately 2,900 persons in the whole preservation

(Continued on Page 67)

GONE ARE THE GUNS . . . Ships going into the Reserve Fleet after war service give up their Navy armament in the stripping process which precedes towing of the ship to anchorage. The teeth have been pulled, but can be put back quickly if ever needed again.



PROPELLER SHAFT IS IMMOBILIZED . . . All machinery of a ship headed for the Reserve Fleet is immobilized. Here workmen lock a brake on the propeller shaft of the SS MISSION SAN LUIS REY so it will not turn during towing of the ship and activate the ship's electric generators.



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WASHINGTON Roundup

By The LOG's Own Correspondents

Marine Radiotelephone Use Urged Upon Industry

The maritime industry faces a momentous decision, how it can best use the 13 frequencies now assigned to it for the application of short distance radiotelephone communications.

If it fails to use the 13 frequencies it will most assuredly lose them from the Federal Communications Commission. Scores of other uses have been developed for these very same channels, and the actual and prospective users are becoming jealous over the maritime industry's favorable position.

The industry is now being surveyed by NFAS to determine how much greater use of radiotelephone facilities can be made for ocean shipping, and jointly with the operators of towboats and other harbor craft servicing the needs of the larger vessels; as well as possible development through municipal or other action of harbor communications systems which will lead to more rapid and economical movement of shipping in critical harbor areas.

There are still other uses to which radiotelephone channels can be put in the marine industry,—towboat dispatching, communications required in the operation of fishing fleets, salvage, offshore loading and dredging operations, and communications required by pilots and organizations serving ships and marine installations.

The significance of the situation becomes of even greater import when viewed against the fact that the VHF radiotelephone channels now proposed by FCC for the maritime industry were only recently increased from 8 to 13 frequencies.

In the words of an important Washington official not wishing to be named—"The chance of retaining these frequencies will be nil unless the maritime industry commences early development of them."

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If War Should Come

At the first impact the United States could anticipate a privately owned and actively operated fleet of merchant ships in its various classifications equal to about 12,000,000 deadweight tons, or about 1,200 ships.

Best estimates show an expectation of one year to 18 months would be required to fully rehabilitate shipbuilding facilities and the beginning of delivery of additional vessels for military support. During this period vessels from the laid up fleet which, at completion of present ECA program, would constitute about 2,000 ocean-going dry cargo vessels could be broken out, drydocked, reconditioned and supplied with defensive equipment. The rate at which this would be done would be about 125 ships per month, dependent of course upon the condition of repair plants and shipyards at the time of the emergency. This is the factor that worries the admirals and generals.

Supporting this program would be the institution of a large training program in order to supply officers and crews as ships would be made available from the laid up fleet.

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American Luxury Liner World's Safest, Finest

The proposed $65,000.000 to $70,000,-000 high speed luxury liner contemplated by the U. S. Lines will be the world's best. After examining the plans, the U. S. Coast Guard gave unstintingly of its praise, said it would be the most modern, efficient and forward looking design ever developed in the world.

The Coast Guard specifically noted the fact that the major features of safety in the proposed vessel are very much in excess of those features now required by the U. S. Government. These excess features are particularly noticeable in the number of sub-divisions bulkheads, damage control procedures, fire retardment construction and in other safety items.

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Jap Shipbuilding Increases Alarm U.S. Tanker Operators

American tanker companies, finding it difficult to secure steel for the building of new tankers, have been alarmed at reports of considerable Japanese shipbuilding of large ocean going tankers. The feeling has been that the Government would permit exports of critically short U. S. steel to Japan, to be used in the tanker construction, principally for Norwegian and other foreign interests, thus making it difficult to secure steel for American construction.

It has been learned that the Secretary of the Navy has already taken action to insure the procurement of steel as a priority allocation for the Navy and Merchant Marine shipbuilding programs under Public Law 395. In addition a group handling the voluntary industry's agreement program under the Department of Commerce may allocate steel for American tankers under the petroleum phase of this program.

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Radar Operators License Not Likely

The Government, through the Federal Communications Commission, appears to be in agreement with the marine industry that no license be required for the operation of radar aboard merchant and other marine vessels.

The industry, through the Lake Carriers Association and National Federation of American Shipping, have contended that responsibility for radar operation and maintenance should be under jurisdiction and at the discretion of the Master as representative of the licensee.

Industry sources anticipate that the FCC may hold hearings on the matter in September.

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U. S. Vessel Preference In Stockpiling Cargoes

American flag vessels will be given preference in the carriage of strategic materials which the Government is now stockpiling against future emergencies.

While almost complete secrecy surrounds the procurement of commodities for stockpiling, it is known that the Government has purchased millions of dollars worth of materials recently. An appropriation of $600,000,000 was made by the recent session of the 80th Congress for this purpose.

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Foreign Discrimination To Be Removed

The 81st Session of Congress meeting in January is expected to speedily approve bills which would in effect prohibit foreign discrimination against American ships. Two bills are being readied, with State Department and industry concurrence, which would provide that the penalty for discrimination against American shipping would be the refusal of clearance with exports aboard of foreign ships in American ports.

The bills originally were written so as to refuse the right of entry of any ship of discriminating nations into any port of the United States. This feature was removed upon request of the State Department, who felt it too severe, and likely to cause retaliation more quickly.

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Industry Declines Financial Support U. S. S.

The shipping industry will not provide industry-wide financial support for the United Seamen's Service. A special NFAS committee who studied the matter found that, while there are a number of ports abroad where it is desirable to have USS facilities maintained, where such special facilities should be continued they were of especial interest to particular steamship companies and that financial assistance to support these special installations should be by voluntary contribution from the specific companies whose ships frequent those ports.

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Philippine Import Restrictions

Shippers of staple goods to the Philippines have no great cause for alarm in a proposed Philippine law to restrict imports. The move is primarily one to eliminate luxury imports.

Advises here in Washington have confirmed the fact however that permits

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WASHINGTON

for imports will be given principally to those who leave their money in the islands as otherwise the foreign exchange dollars would be soon dissipated.

In this respect the Philippines are taking advantage of the experience of other nations who spent heavily for American luxuries and now find themselves short of the necessary dollars to purchase staples.

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Shipping Reserves Now $150,303,541.52

There is now in the capital reserve funds of the 12 subsidized lines a total of $48,770,654.59 available for purchase of new vessels limited however to operation on an essential foreign trade route. The same companies have an additional $70,307,163.77 in the special reserve fund, or total capital and special reserve funds of $119,077,818.36.

Eighteen unsubsidized companies have in the construction reserve fund under Section 511 of the 1936 Merchant Marine Act a total of $31,225,723.16.

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Shipping Uncertain Over Safety-of-Life-at-Sea Ratification

The shipping industry is uncertain as to its support for ratification of the recently concluded Safety-of-Life-at-Sea convention held in England. It does not fear the regulations promulgated for construction of merchant vessels. American standards are now so far ahead of those adopted that ratification of the convention is more likely to bring foreign standards closer to U. S. requirements.

The proposed SOLAS convention action will require ratification of the U. S. Senate and will come into effect on January 1, 1951, if by that time it has been ratified by 15 nations, seven of which must possess Merchant Marines over 1,000,000 gross tons.

The uncertainty stems from the fact that under the provisions of the charter adopted, the Intergovernmental Maritime Consultative Organization is to become the repository and central secretariat for the Safety Convention. As it stands now, industry has no guarantee that it will have active participation in IMCO nor does it have any guarantee that it will have a part in formulating instructions to the American Government representatives who will serve on IMCO.

It appears likely that the shipowners and operators will seek some specific safeguard which will provide for representation by industry in formulating instructions to the Government representatives.

To meet the situation NFAS has appointed an International Shipping Organizations Committee, composed of top executives in the industry, who will study IMCO, SOLAS, and other international organizations so as to determine the effect of their actions on American shipping. Chairman of the committee will be H. W. Warley, president, Calmar Steamship Co.

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Washington Corridors

The CIO Maritime Committee who urged Senate hearings on long range shipbuilding and shipping legislation, changed its tune when the special session opened and urged that no hearings be held on any shipping legislation.

The Department of the Army is not considering at the moment any action to rehabilitate Japanese shipping to its prewar size and importance, but there is no promise or certainty that it may not take such action in the future. The Army has asked the industry to present its views.

Washington maritime observers continue to hear reports that: AGWI and Black Diamond may merge . . . One of ECA's most difficult jobs will be to assure that 50% of cargoes really go on American ships . . . That a Republican administration next year will appoint the new M.C. Commissioner David Coddaire . . . That a radar survey may shortly be started by the National Federation of American Shipping to evaluate its usefulness and shortcomings on merchant vessels . . . That a number of the domestic lines do not want to seek legislation to correct discriminatory rail rates, preferring the docket procedure before ICC.

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U. S. Possesses Majority World's Big Merchant Ships

At present, according to latest Washington marine statistics, there is a total of 10,456 dry cargo ships in the world; 1,927 tankers, or a total of 12,377 of more than 1,000 gross tons each. Of this total, the U. S. now possesses 3,911.

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Merchant Seamen May Get Draft Deferment

The U. S. Maritime Commission has been requested by Selective Service to advise whether regulations should cover deferment for men employed in the Merchant Marine. Shipping generally, including shipowners and labor, are supporting deferment. There is some possibility that the Maritime Commission would handle deferment procedures similar to WSA's method during wartime.

On the other hand, it is a well-known fact that thousands of seamen and officers are on the "beach." New York State alone has more than 4,000 merchant seamen on the unemployment rolls, and the number is increasing daily. On the West Coast a sampling of crew and officers of merchant ships showed in July more than 72% of unlicensed men over draft age and more than 83% of officers above 25 years old. These facts will be seriously considered by Selective Service when weighing the advisability of deferments.

New Construction Dilemma

The industry and scores of other civic and business organizations have deluged the Senate Interstate and Foreign Commerce Committee with requests for public hearings on H. J. Res. 412 and 413 in an effort to get shipbuilding underway. At this writing there appears only a 50-50 chance that the Senate will hold such hearings. If hearings are held, the industry has already been advised they'll be confined only to national defense or emergency features of the two resolutions.

Meanwhile the stream of conferences between the Maritime Commission and shipowners have resulted in the Commission raising its evaluation as to the amount of aid which can be extended under present law. The margin between what the owners require and what the Government can supply is diminishing. If the margin can be dissipated some Washington observers believe U. S. Lines, APL, American Export, and Moore-McCormack might start on 10 new passenger ships to cost between $215,000,000 and $235,000,000; further possibilities envision Grace, Farrell Lines, AGWI, and Delta engaging in construction programs.

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Shipping Legislation Vital To Maritime Industry

For years the steamship, and for that matter the entire maritime, industry has discounted or minimized the effect of national legislation upon its long range stability and success. During the past three years there has been more awareness on the part of the industry as to the effects of national legislation.

It may come as a surprise to many but during the second session of the 80th Congress more than 160 Bills were introduced which affected shipping and the maritime industry. Of these, 54 were of major importance which were enacted into law.

To keep its fingers on the pulse of national legislation affecting shipping and the maritime industry, the National Federation of American Shipping checked and examined more than 4,000 separate Bills, issued 44 Legislative reports to its members containing digests of particular Bills, and 336 reports on legislative action. In addition NFAS representatives testified, in most cases at great length in comprehensive detail, on 27 occasions before Congressional committees.

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Charles Marshall Given New Maritime Position

Charles D. Marshall, formerly of the Grace Line, has recently been appointed to the newly-created position of general manager of the Maritime Commission. In this new post, it will be Mr. Marshall's duty to supervise all bureaus of the commission to see that directives of the commissioners are carried out.

He will also supervise the allocation of funds under the jurisdiction of the commission.

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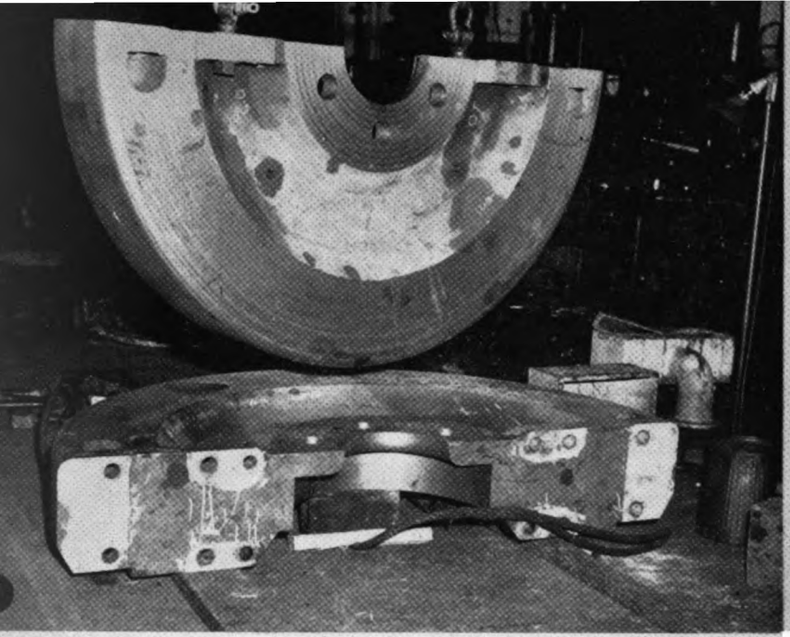

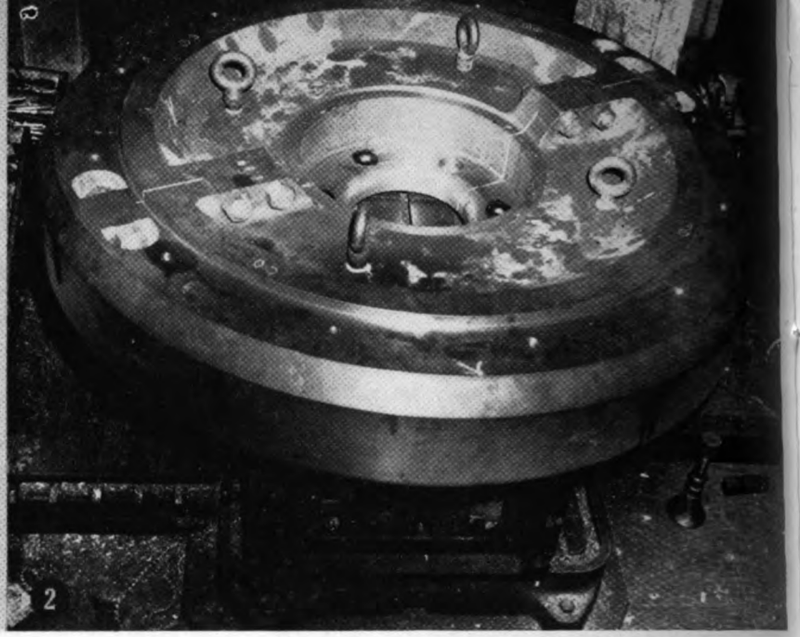

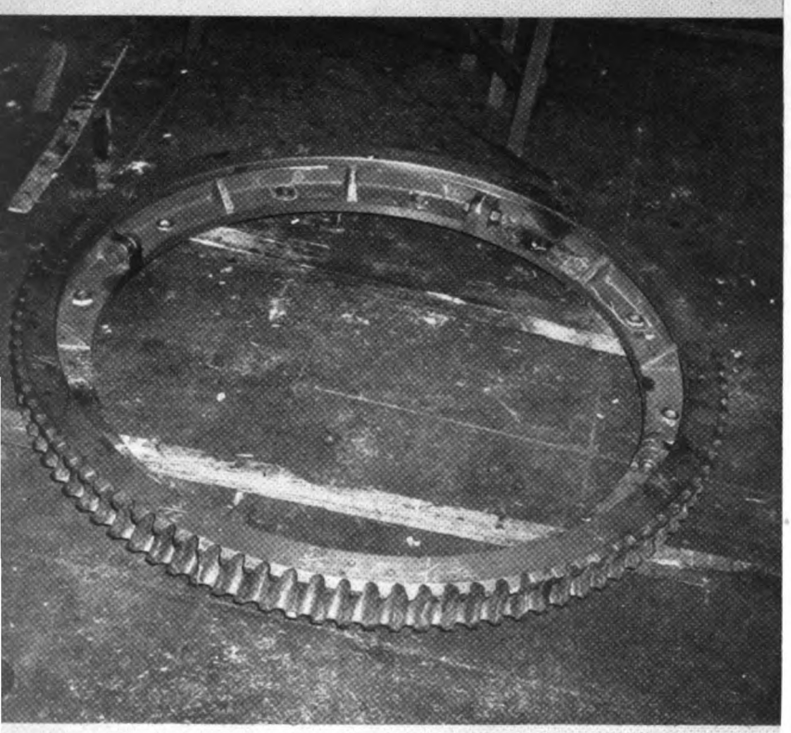

FLYWHEEL

TODD'S INSTALLATION

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1. Flywheel in two sections.
2. Flywheel on lathe in shop.
3. Gear removed from flywheel.
4. Flywheel & Gear on lathe in shop.
5. Flywheel installed in shop—aft and looking forward.

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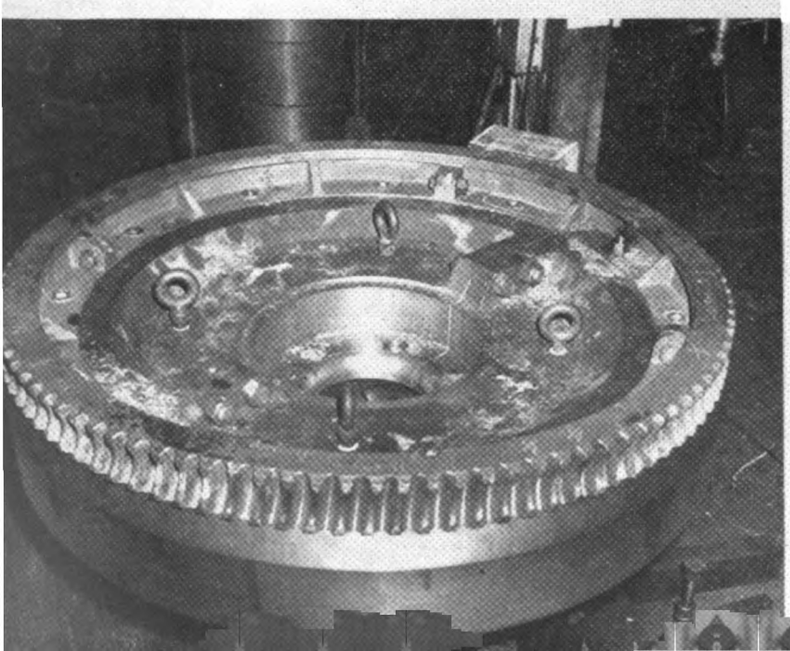
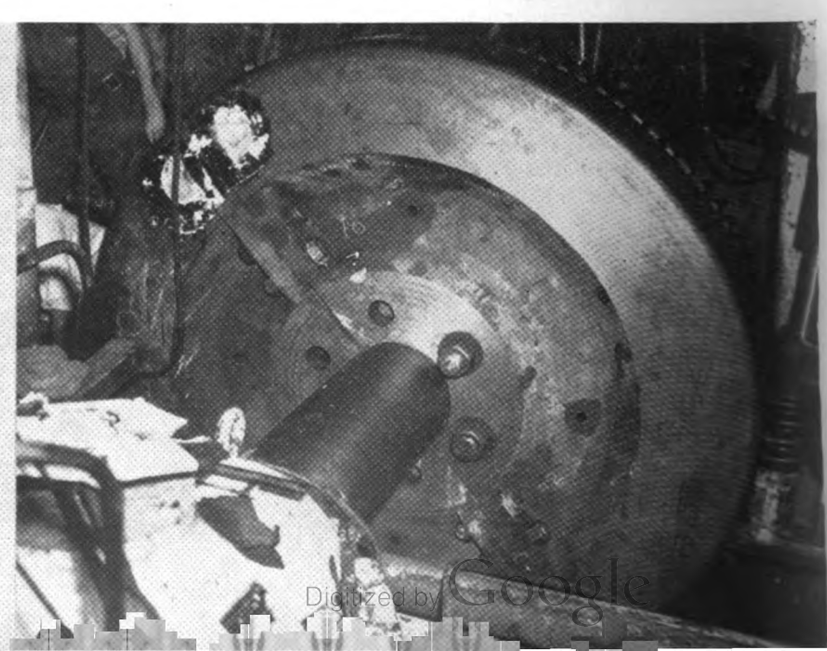
Frequent failures on Liberty type vessels in their propelling system have created intensive study of their design and practical operation to determine the causes of failures and the necessary corrective measures. Reasons for these failures, proven by actual physical condition and theory, center around the vibratory torsional stresses set up at critical revolutions, especially if the main engine is operated at or near maximum designed speed for a sufficient period of time.

The continuation of shafting troubles has risen to such proportions that the American Bureau of Shipping has instructed its surveyors to reduce their tailshaft-drawing due dates from every three years to a maximum of two years for the Liberty type vessel.

The most prevalent appearance of this failure is a fracture in the large end of the taper in way of the keyway of the tailshaft. To discover this fracture, the tailshaft must be drawn and submitted





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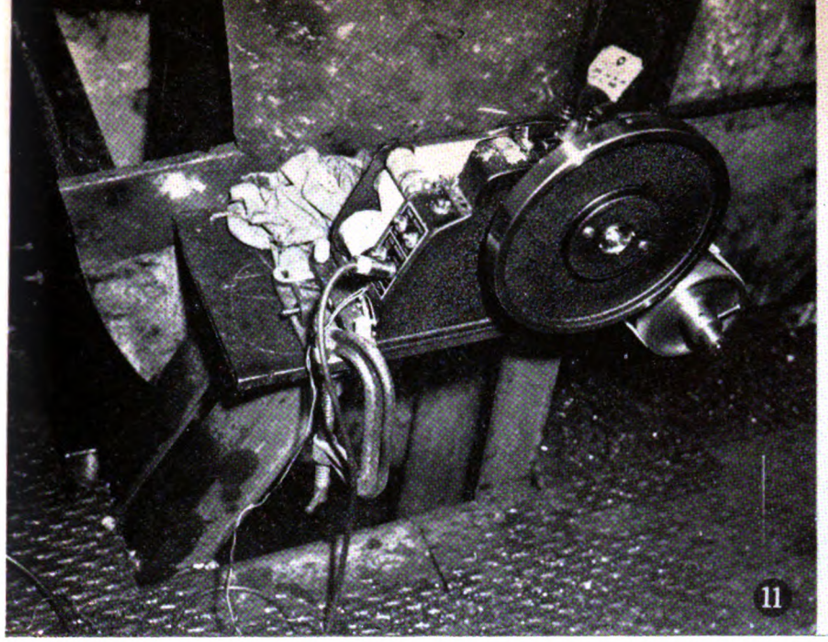

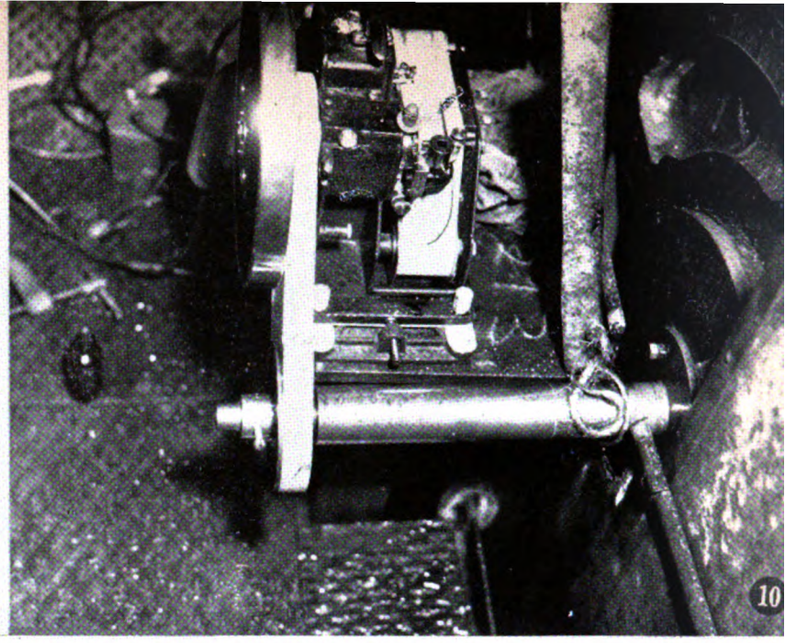

ON LIBERTY

CUTS SHAFT VIBRATION

to a magnetic particle (Magnaflux) examination, as normal inspection methods are not sufficiently positive. Recent tailshaft examination of the following Libertys: ss SAMUEL COLT, ss JOHN GOODE, and ss DESPINA in the Todd Shipyard Corporation yard at San Pedro, California, disclosed this same condition. New tailshafts in each case were installed.

ABS Recommendations

The American Bureau of Shipping has recommended to the owners to limit their speeds to 66 RPM for safe operating conditions although the designed speed is 76 RPM.

Records of actual tailshaft failures gathered by owners and interested inspectors were available for study. Various tests were conducted and four modifications to overcome these failures were recommended by the American Bureau of Shipping, one of which is to install a flywheel aft of the main engine. This lowers the natural vibratory frequency

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6. Flywheel installed on ship—forward and looking aft.
7. Turning gear.
8. Turning gear.
9. Flywheel guard.
10. and 11. Graph instrument forward of main engine.

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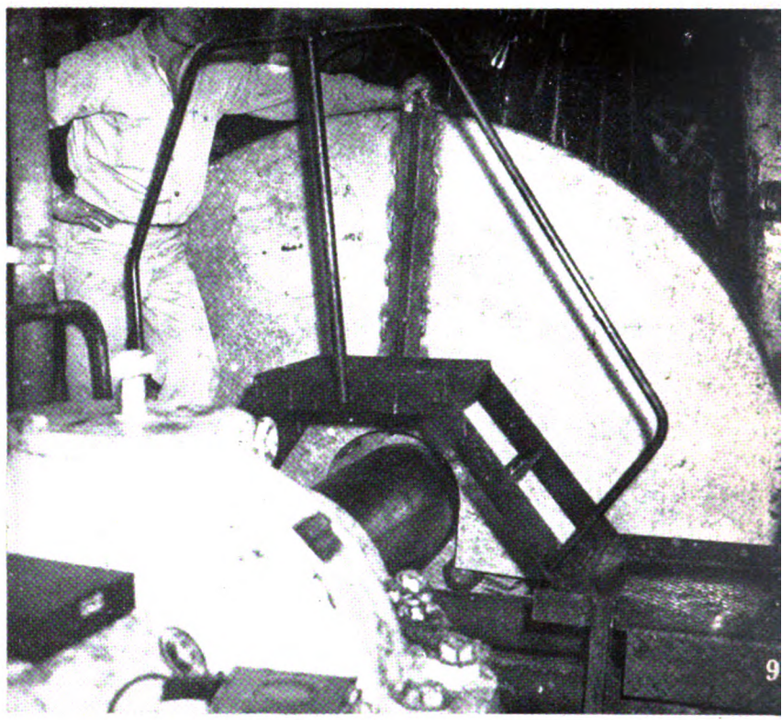

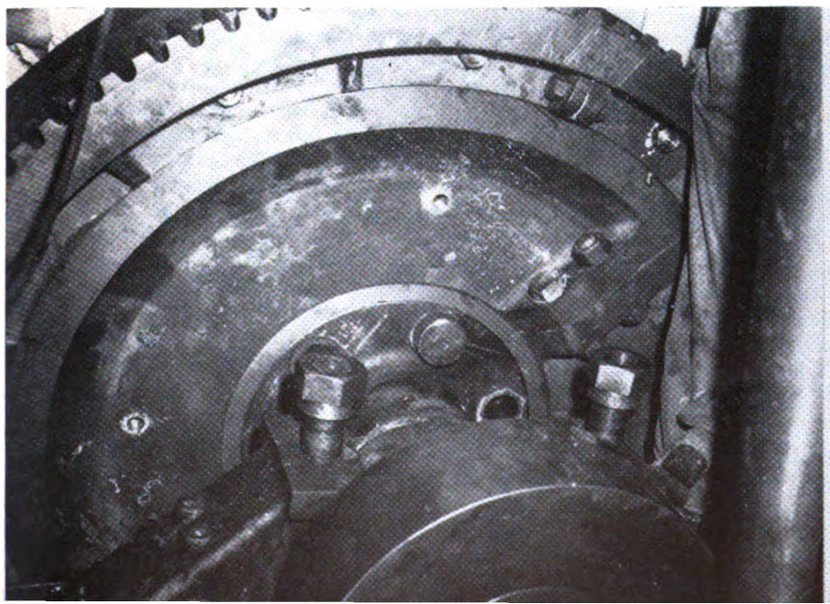

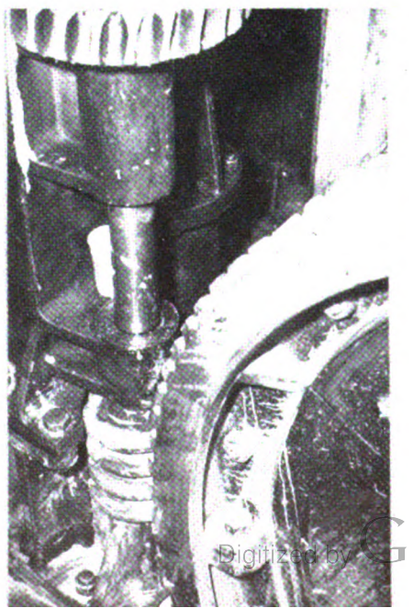

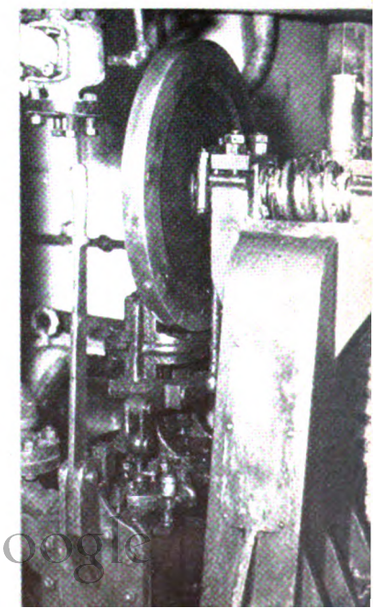

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ABOARD THE JOHN GOODE ON THE TRIAL RUN . . . Lower row, l. to r.: EDWARD G. BAKER, American Bureau of Shipping, New York; J. C. HUNLEY, U. S. Coast Guard; H. E. HARPER, Chief Engineer; MR. MARKS, U. S. Customs Office; F. B. HARPER, observer; F. P. MILLER, American Bureau of Shipping; G. McCARTHY, U. S. Coast Guard; F. REDMOND, U. S. Maritime Commission; H. H. WHITESEL, World Wide Tankers, Inc.

Upper Row, l. to r.: E. MILLER, Time Oil Co.; CAPTAIN JORGENSEN, SS JOHN GOODE; S. BRUMMEL, W. H. Wickersham & Co.; GEORGE A. BRADFORD, Marine Superintendent, World Wide Tankers, Inc.; S. STEIN, Long Beach Naval Shipyard; E. BROOMALL, Todd Shipyards Corporation; A. WAXMAN, Long Beach Naval Shipyard; R. K. ENGLISH, Todd Shipyards Corporation.

of the system sufficiently to permit the operation of the engine at the maximum designed speed of 76 RPM.

In anticipation of the action taken by the classification society in order to maintain the designed speed of the Liberty ships, Todd Shipyards Corporation authorized Gibbs & Cox, naval architects, to make a complete study and prepare plans for the approval of the American Bureau of Shipping for these various recommendations. The first recommendation to be used was the installation of the flywheel installed on the main engine line shaft at the coupling between No. 6 main bearing and the thrust bearing. The size and weight, determined by calculations from torsiograph curves, was subsequently approved by the American Bureau of Shipping and the U.S. Coast Guard.

Todd Installs Flywheel

Todd Shipyards Corporation, Los Angeles Division, was engaged to install a flywheel on the ss JOHN GOODE, a Liberty tanker recently purchased by the World Wide Tankers, Inc., of Los Angeles and Seattle, a wholly owned subsidiary of Time Oil Company. The flywheel was installed on the vessel, using drawings furnished by Gibbs & Cox which complied with regulations and inspection by the American Bureau of Shipping and the U.S. Coast Guard.

The important parts being castings, patterns were made for the following: flywheel, worm wheel gear, and the turning gear pedestal. The rough weight of these castings aggregated 19,930 pounds including ⅜" material allowance for finish machining.

The flywheel, having been cast in halves, required facing and bolting together prior to being rough- and finished-machined in the Cincinnati vertical boring mill (Photographs No. 1 and No. 2).

The worm wheel or tooth gear was cast in four 90° sections. This necessitated facing each section prior to assembly and bolting (Photograph No. 3). The assembled gear was then laid out and formed in order to machine to diametrical pitch. After being bored to fit the flywheel, the gear was fastened to it with bolts. The finished weight of the complete flywheel (wheel and gear) was 15,005 pounds (Photograph No. 4).

The only requirement for special tools was the wrench for fastening the flywheel halves together at the nut core near the periphery of the wheel (Photograph No. 2). No special jigs or fixtures were required for the machinery operations.

While the flywheel and associated parts were being machined in the shop, the existing turning gear, shaft coupling bolts, No. 6 bearing cap, piping and gratings were removed.

The completed flywheel was disassembled and lowered into place on the ship in halves. After rebolting and aligning with the coupling bolt holes, the wheel was bored for coupling bolts (Photograph No. 5). With the wheel bolted to the coupling, installation of the worm wheel gear followed (Photograph No. 6).

The No. 6 bearing cap was refitted and the turning engine was installed in its new position. After aligning the worm gear of the turning engine with the worm wheel, the pedestal foundation was drilled for fitted bolts. With the foundation secured, all alignments were checked by rotating the flywheel (Photographs No. 7 and No. 8). Associated equipment such as piping, gratings and guards were reinstalled (Photograph No. 9).

New Tanker Company Operates The SS JOHN GOODE

World-Wide Tankers, Inc., Los Angeles, recently put into commission the Liberty-type tanker, JOHN GOODE, to operate along the Pacific Coast, with Seattle, Tacoma, Portland, Stockton, Richmond and San Pedro as its ports of call.

President of this new company is H. H. Whitesel, formerly district manager at Wilmington, California, for the Hillcone Steamship Company. Marine superintendent is George Bradford, who was formerly with the Cavanaugh Machine Works, Wilmington, the United States Salvage Association and the former Los Angeles Shipbuilding Company, San Pedro. Vice-president is Ray D. Abendroth, Seattle, and secretary is George Mitzel.

In the overhaul job of the JOHN GOODE recently completed at the Todd-Pacific shipyard at San Pedro, one mast was removed and the flywheel installed on her main shaft. The ship, too, was fireproofed under new Coast Guard rules. Two De Laval 175 hp steam turbines have been ordered for her cargo pumps.

World-Wide Tankers transports petroleum products for its parent firm, Time Oil Company, an independent oil company having deep-water terminals at principal West Coast ports.

The JOHN GOODE is classed for carrying gasoline and is available for charter.

Torsional Vibration Instruments Installed

Instruments to record on paper the torsional vibrations of a rotating shaft (Geiger & Cox Torsio Graph Instruments) were installed and checked during a brief dock trial held on July 22, 1948. These machines were placed in three separate locations, namely:

1. Fwd. of the main engine on the end of the H.P. crankshaft. (Photographs Nos. 10 and 11).
2. Aft of the thrust bearing.
3. Fwd. of the stern tube but aft of the spring bearing.

These separate locations permit (1) comparison of the recordings, (2) accurate analysis of vibration, and (3) calculations for stress and curves.

Three records are imposed upon a tape simultaneously during the operation of these machines, namely:

1. Actual vibration of the shafting.
2. A timing mark in fifths of a second.
3. The number of shaft revolutions.

Each instrument has a light pulley, driven by a special fabric belt connected to the main shafting. This pulley follows the torsional vibration of the rotating shaft. Loosely coupled to the light pulley and an integral part of the instruments is a heavy inertia mass or flywheel which rotates at a uniform speed. The relative motion between the light pulley and the inertia mass, through a linkage, actuates the pen across the moving strip of paper.

Through a medium of a pen, a clock run by battery records time on the tape in fifths of a second. The number of

(Continued on Page 54)

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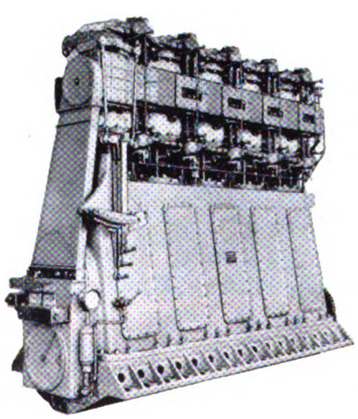
The Sleek New Canadian National Passenger Ship "PRINCE GEORGE" . . . Powered with Versatile...



Skinner Marine Unaflow Steam Engines: two to eight cylinder --400 to 6,000 hp.

The S. S. "Prince George," in the words of an official of Canadian National Railways, "is bigger, faster and more modern than any passenger-carrying vessel sailing today in the northern coastal service of British Columbia."

The ship will carry 322 passengers and 400 tons of freight and will operate between Vancouver and Alaska. She is a twin-screw vessel, powered with two 6-cylinder Skinner Marine Unaflow Steam Engines, each rated at 3500 hp. and built by Canadian Vickers, Ltd.

The choice of Skinner Marine Unaflows not only assures operating and maintenance economy . . . in those troubled coastal waters the unsurpassed maneuverability of Skinner Engines provides the greatest possible safety factor.

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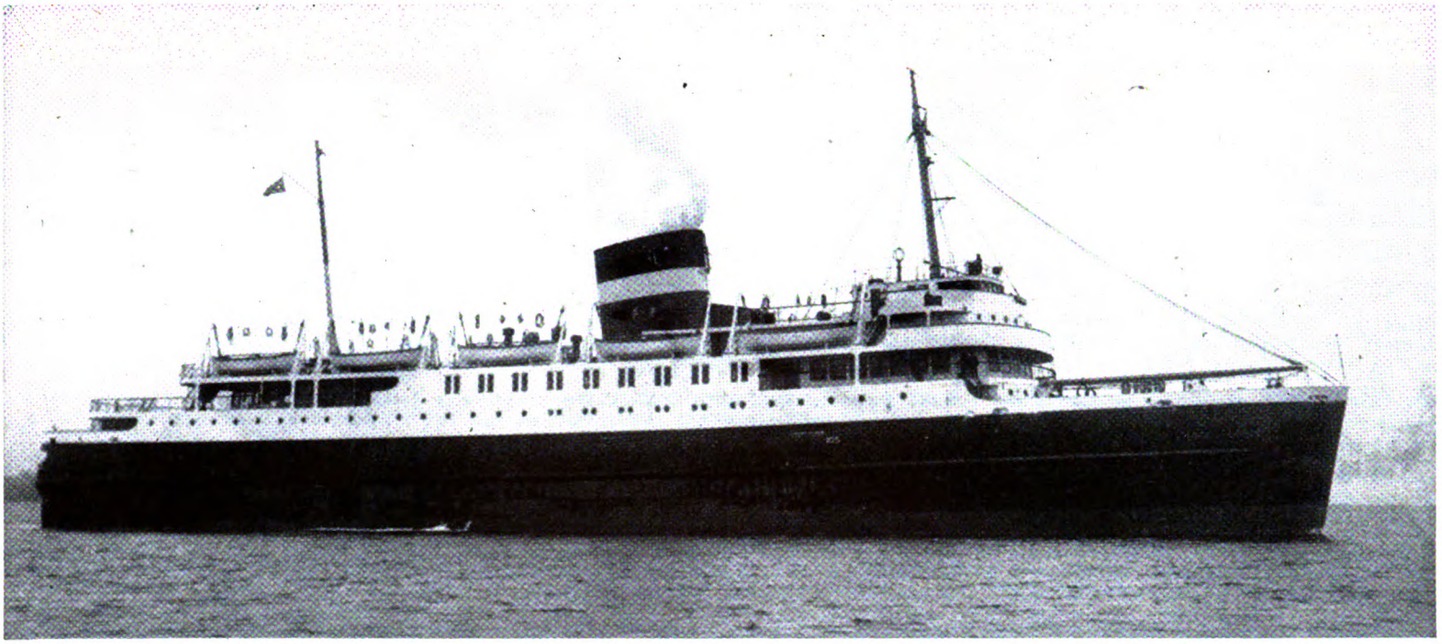


NEWLY COMPLETED Canadian National Steamship PRINCE GEORGE, largest passenger ship ever built on Canada's west coast.

SS PRINCE GEORGE - CANADA'S NEWEST PASSENGER SHIP

Largest passenger ship ever built on Canada's west coast, the Canadian National Steamships' new 5,800-ton ss PRINCE GEORGE, went into service between British Columbia ports and Alaska earlier this year.

The ship was built at the Yarrows, Ltd., plant at Esquimalt, B.C., Vancouver Island subsidiary of Burrard Dry Dock, Ltd., of Vancouver.

Length overall of the Prince George is 350 feet; moulded depth 52 feet; maximum draft, 17 feet, 6 inches; speed, 18 knots; gross tonnage, 5,800 tons; deadweight tonnage, 1,050 tons.

There are seven decks in all; the lower and orlop decks extend forward and aft of the machinery space; the main, upper, promenade, boat and navigating decks are continuous fore and aft.

Although primarily intended for the passenger trade, the new ship has a considerable amount of cargo space provided in holds 1 and 2 forward of the machinery space.

Provision for the transport of motor cars is a special feature. An electrically operated elevator at No. 2 hatch provides for the movement of automobiles through the main deck to the orlop deck.

Passenger accommodation, spacious, well-lighted, decorated in the modern trend, is arranged in the promenade, upper and main decks. The ship has accommodations for 322 passengers, 294 first class. The crew will number 132 officers and men.

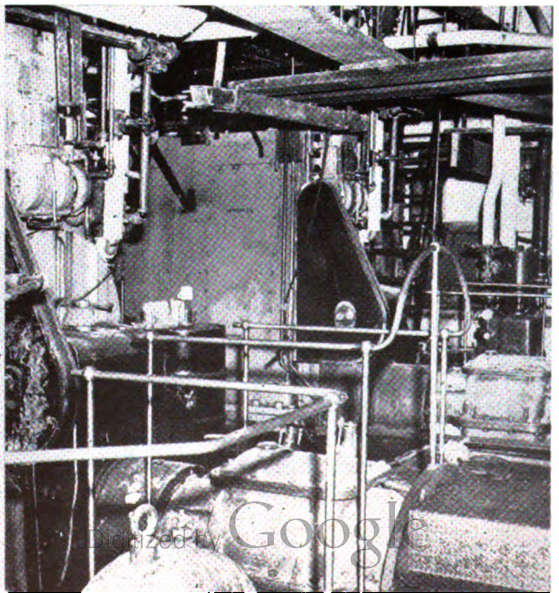
Two Skinner Engines

The Prince George is powered with four Yarrow naval type boilers having four oil-fired burners to each boiler. Working pressure of the boilers is 240 pounds per square inch, with superheating at 150 degrees Fahrenheit. This steam plant provides power to two Skinner Uniflow engines, each of six cylinders 23 inch diameter and 26 inch stroke, with working pressure of 240 pounds per square inch. The power plant is designed to propel the vessel at an average of 18 knots at 175 R.P.M.

The Uniflow engine is regarded as one of the most modern developments in steam power. Valves in the Uniflow are the poppet type, cam operated. The engine is completely inclosed, pressure lubricated. The engine can reverse from full ahead to full astern in short time. This affords maneuverability so necessary to operation in the island studded and often fog-shrouded waters of the British Columbia coast.

Sitting room at the after end of the upper deck aboard the ss PRINCE GEORGE. Kearfott windows were used in the construction of this vessel.

After port corner of the engine room of the new ss PRINCE GEORGE showing the Skinner Uniflow main engines.



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THE SOCIETIES OF PORT ENGINEERS

THE SOCIETIES OF PORT ENGINEERS . . . PUGET SOUND—Top row, left to right; J. H. MINNICK, head office, service representative, San Francisco; H. B. KEATING, technical applications, Martinez, both from Shell Oil Company; S. K. SMITH, principal surveyor, American Bureau of Shipping, Seattle; H. E. LOVEJOY, Assistant Port Engineer, Puget Sound Freight Lines, Seattle; HARRY M. BROWNE, division service representative, Shell Oil Company, Seattle.

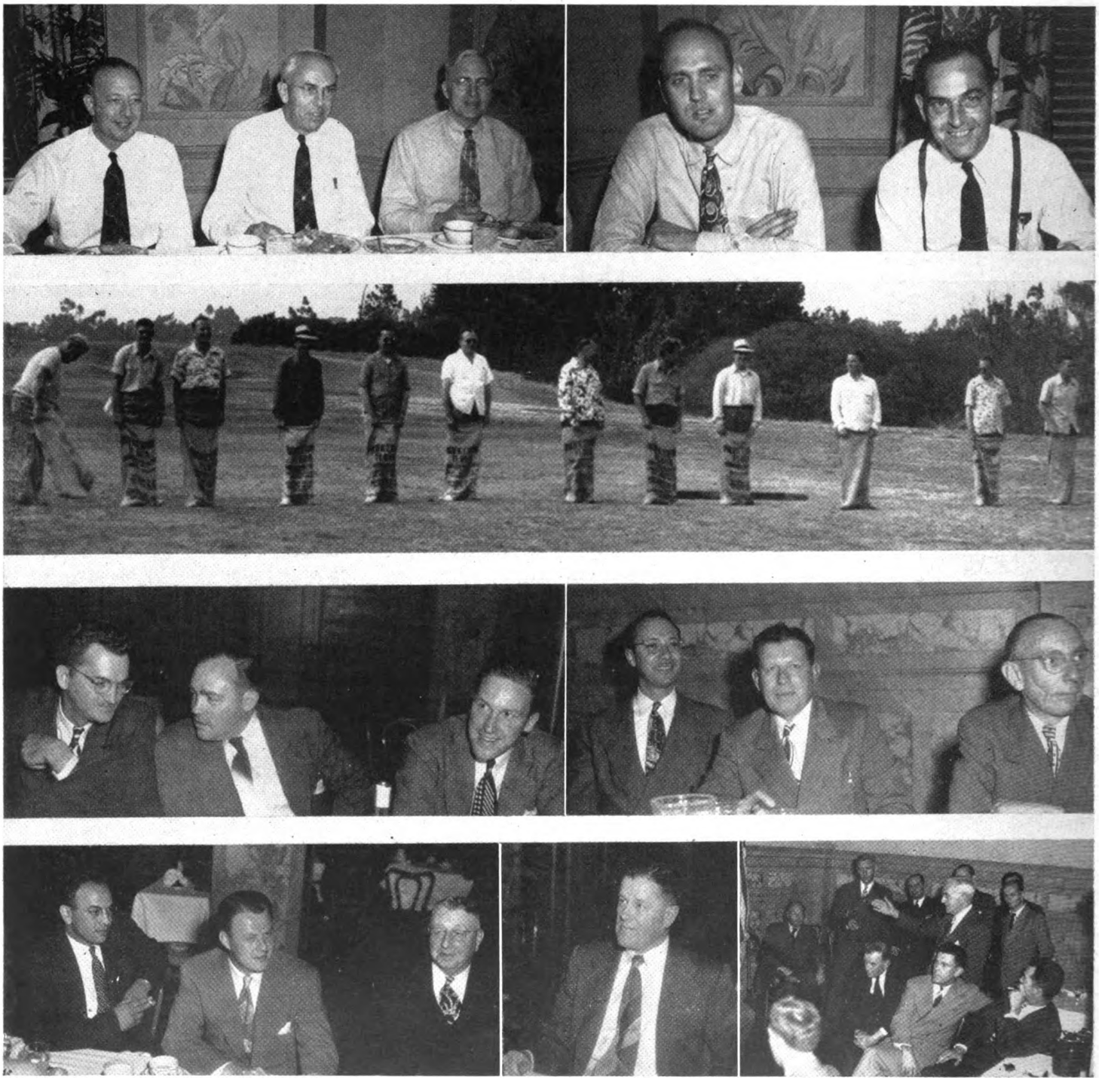
THE SOCIETY OF PORT ENGINEERS, Los Angeles, held a very successful first annual picnic and barbecue at the Palos Verdes Country Club, San Pedro, in June. The accompanying picture shows the start of the sack race, but doesn't show the finish in which nearly all the entrants were sprawled on the ground.

Left to right: JOE HARE, United States Maritime Commission; GEORGE McCOY, Marsol; MIKE KELLEY, Richfield; JOE WOSSER, Matson; GEORGE HOXIE, American President; JOE DENNIS, Craig Shipyard; GEORGE CURRAN, American-Pacific; ALEX ROBINSON, Long Beach Marine Repair; HAMPTON NEERGAARD, Burns Steamship; ED PIKE, American Bureau; BILL JOYCE, American-Pacific and "BING" MILLER, American Bureau. Mr. Wosser is president of the Society. Alex Robinson won the race.

SAN FRANCISCO—Third row, left to right: HARRY MARTIN, Moore-McCormack; JOE DENNIS, Craig Shipbuilding Company, Long Beach; GEORGE HORTON, San Francisco, Vice President, International Paint Co.; three International Paint Co. men—BILL AVENS, Plant Manager and Chemist, San Francisco; HAROLD WRIGLEY, Marine Representative, San Francisco; ARTHUR WARD, President, New York, speaker of the evening.

Bottom row: San Francisco continued—BERNARD M. WOLFE, President, and F. J. DANENFELSER, Vice President of Manning Mitchell, Inc., San Francisco paint manufacturers; CHARLES JACKSON, Long Beach, Pacific Coast Manager of the Oxi Corporation and Southern California Representative of the De Boom Paint Company, CAPTAIN ELWOOD MOTT, American Mail Line.

Bottom row, right: FRED BLANCH, American Marine Paint Co., expounds on bottom paints in the round-table discussion, left to right: H. A. LUKENS, Federal Paint representative with Pillsbury & Martignoni; LARRY RAPP, C. C. Moore & Company, Engineers; CAPTAIN A. S. PITRE, U.S.N.; FRED BLANCH, GEORGE HARLAN, U.S.A.T.; seated—WILLIAM SIZEMORE, U.S.A.T.; DICK PARKIN, Westinghouse; HARRY MARTIN.



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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

Talk on Marine Paints Heard By San Francisco Engineers

"I am sure it would pay shipowners to assign men to supervise each painting job, because I have seen serious and costly errors result from lack of knowledge of marine paints," said Arthur Ward, New York, president of the International Paint Company, in a talk on marine paints before The Society of Port Engineers, San Francisco, at its August meeting.

"Marine paint manufacturers would train these men in proper painting procedure. Too, I think shipowners should seek and follow the advice of paint manufacturers in the application of coatings."

Mr. Ward stressed the necessity of proper cleaning of ship bottoms before painting and announced that his company is experimenting with a roller shaped, air-driven wire brush with flat steel spring wires for cleaning hulls. These brushes have been used for many years, he said, and remove all semblance of fouling and corrosion without harming the good adhering paint. In addition they remove the high spots on the surface of the paint, which grow in size at every ensuing painting, resulting in rough scarred hulls and increased water friction. Earlier brushes, however, were unsatisfactory, because the wires vulcanized and broke. Recent developments have disclosed a new method of mounting the wires to eliminate the breakage."

Representatives of several other paint companies heard Mr. Ward's talk and a lively round-table discussion followed.

Phillip S. Thearle, president of the Society, announced the appointment of Frank W. Smith, American Mail Line, as chairman of a committee to arrange the organization's second annual Christmas dinner dance in the Terrace Room of the Fairmont Hotel Friday, December 17th. Mr. Smith was chairman of the committee which staged the very successful Port Engineers first annual dance last December. He announced his same committee would serve with him.

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Shell Men Discuss Lubrication With Seattle Port Engineers

H. B. Keating, technical applications, Shell Oil Company, Martinez, California, assisted by J. H. Minnick, head office service representative from San Francisco, and Harry M. Browne, service representative at Seattle; are responsible for the interesting program offered to the Society of Port Engineers of Puget Sound July meeting.

Using a well-edited film on well drilling followed by slides illustrating the manufacturing cycles of oil refining the speakers explained clearly the processes entering into the production of modern lubricating oils. Emphasizing that heat and oxygen are the enemies of lubricating oil explanation was made that in the process of refining to obtain high grade oil some ingredients are extracted in order to draw off unwanted elements with result that some additives are actually putting back into the oil a proportion of the original. The discussion included descriptions of detergents, anti-rust, inhibitors, oxidation prohibitor, anti-foam and anti-corrosion compounds, and concluded with the admonition that the best solution to lubricating problems is to keep the system clean.

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American Export Lines To Have Two New Fast Ships

With American Export Lines' recently completed agreement with the U. S. Maritime Commission, which assures immediate construction of two of the largest and fastest express passenger vessels to fly the American flag, new passenger ships will be ordered by a private operator for the first time in 10 years.

To be constructed by Bethlehem Shipbuilding Company's Fore River Yard, Quincy, Massachusetts, at a cost of $23,415,000 each they will operate in the line's Mediterranean service. Estimated at 20,000 gross tons, 30,000 displacement tons, overall length 683 feet, breadth 89 feet and draft of 30 feet, these 972-passenger steam turbine driven twin screw vessels will have a speed in excess of 25 knots.

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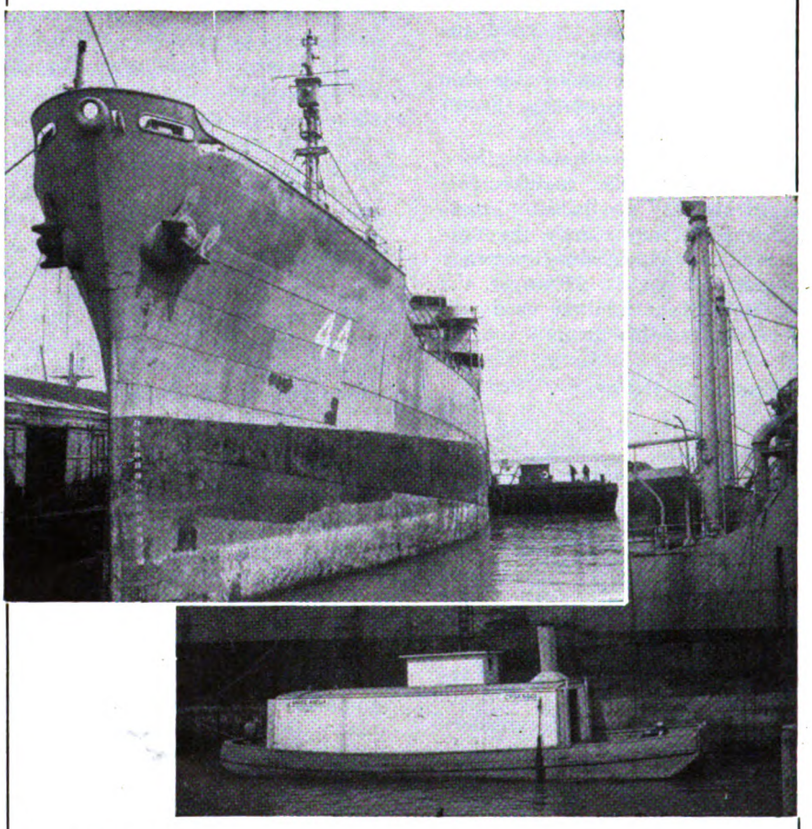

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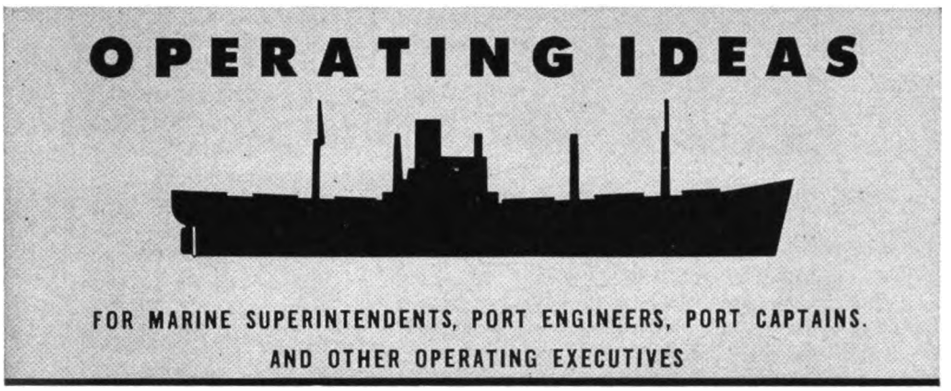

DAMAGED STABILITY

By EDWARD V. LEWIS
Naval Architect
George G. Sharp

All ship operators are familiar with the problems involved in maintaining adequate stability for safety in various conditions of loading. Careful consideration must be given to the stowage of cargo, the use of fixed and/or salt water ballast, keeping free surface of liquids in tanks to a minimum, etc. These problems are often especially troublesome because, as the master is well aware, the metacentric height (GM) called for by damaged stability considerations may be in excess of that needed for good sea behavior. In fact, the apparently excessive stability is apt to make the ship less comfortable because of the shorter rolling period which results.

It is proposed to outline here the considerations on which the requirements for damaged stability are based. Possibly the discussion may clarify the reasons for standards which sometimes may appear excessively severe. However, the actual methods of calculation used will not be dealt with at this time.

General Considerations

It has been customary for a long time in designing ships, to investigate the spacing of watertight bulkheads to attain the greatest practicable safety against foundering after flooding (i.e. sinking of a vessel without appreciable listing). International standards were established by the International Convention for Safety-of-Life-at-Sea in 1914, and were revised in 1929. However, a number of cases of capsizing after flooding, including the *Empress of Ireland* in 1914, demonstrated the necessity for also considering the effects of flooding on stability. No international regulations on the subject were set up in either of the above International Conferences, but a beginning has finally been made at the Conference just concluded in London.

The first point to be considered in connection with damaged stability requirements is that no matter how well a ship may behave in ordinary service, if it suffers collision or grounding severe enough to allow admission of water, its stability will suddenly and sometimes drastically change. The problem is to maintain sufficient stability in normal operation so that the ship will survive any damage of reasonable extent, though it is obviously impracticable to provide against every possible contingency.

Bottom Damage

Modern ships are very well protected against most types of bottom damage by their double bottoms, which are required by classification society rules for all vessels, except tankers, over 300 ft. in length. If the damaged tanks are full at the time of an accident, no appreciable change in stability will result. If the tanks are empty, a damage affecting the entire width of the double bottom will ordinarily increase the GM. However, if the bottom damage is confined to one side, the predominant effect will be heeling, effect due to the loss of buoyancy on one side of the vessel. This effect can usually be overcome by the filling of the bottom tank on the opposite side of the ship from the damage. This will tend to increase the GM and reduce the heeling moment at the same time. Only one tank should be filled at once, however, and that as quickly as possible in order to minimize free surface effect.

Side Damage

Most side damages in peacetime are the result of collisions. When one vessel rams the side of another, the former ship usually is sufficiently protected by its forepeak bulkhead to remain afloat. The forepeak bulkhead is required on all ships by several regulations and ordinarily the only opening permitted in it is for the suction line from the forward peak tank.

The ship whose side is penetrated may not be so fortunate, and as soon as the other ship's bow is withdrawn from the hole, sea water may pour into the hold or machinery space in an irresistible flood.

There are a number of factors which determine the seriousness of such a side damage as described as above.

(1) Does it extend below the waterline?
(2) Is it located between watertight bulkheads, or does it extend across a watertight bulkhead?
(3) Is any wing tank affected by the damage?
(4) What are the contents of the flooded spaces, and if cargo, what type and how stowed?
(5) Is there sufficient stability to prevent serious heeling or capsizing.

The first three factors are largely matters of chance. Fortunately the recent tendency to use raked stems increases somewhat the likelihood of collision damage not extending below the waterline. A study of collision data shows that the great majority of damages are comparatively limited in extent, say 20 to 30 ft. in length—but whether or not a watertight bulkhead is involved is purely a matter of luck. It is obvious that a 10 ft. hole at a bulkhead may be much more serious than a 40 ft. hole between bulkheads. This situation is not fully taken into account by existing standards and government regulations, because of the much greater practical difficulties in providing safety against "two-compartment" and "one-compartment" damage.

Effects of Side Damage on Stability

As water flows into an empty cargo hold or machinery space, the first effect is a reduction in GM due to the large resulting free surface. After flooding has been completed, however, and the water level in the space is the same as outside the ship, the net effect is usually only a slight reduction—or quite often an actual improvement—in the initial stability over the condition before damage. There are several factors involved, some favorable and some unfavorable. The opening of the compartment to the sea is equivalent to removing a portion of the ship's waterplane area which results in a reduction in moment of inertia, and therefore BM. The sinkage of the ship, however, to a deeper draft causes the center of buoyancy to rise considerably, which is very helpful. Also, the fuller waterline at the deeper draft results in the recovery of some of the lost waterplane moment of inertia and hence BM. Whether or not the combination of these effects will increase or decrease GM can be ascertained only by calculation. Such calculations require that assumptions be made regarding the factors mentioned above, i.e. extent of damage, "permeability" of the space, limiting angle of heel, etc.

If the damage is extensive and the reduction in GM large, the effective GM may become negative. In this case the ship will heel to one side or the other, and is subject to dangerously erratic behavior such as lolling unexpectedly from one side to the other.

If a flooded hold contains cargo, assumptions for cargo permeability must also be made. Furthermore, the initial period of incomplete flooding may be prolonged as a result of the time required for the water to infiltrate through the cargo.

Usually the most serious conditions occur when the flooding is unsymmetrical

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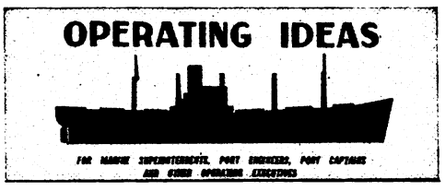

transversely. Such flooding results when there are wing tanks, longitudinal refrigerated space bulkheads, centerline deep tank bulkheads, shaft tunnels, and similar restrictions to flow of water from one side to the other. Regardless of whether or not the GM is seriously reduced, a list will result which may permit water to flow in through sideports or airports or over the tops of bulkheads. One of the principal problems of damaged stability is to minimize the possibility of such unsymmetrical flooding and to provide means for equalizing it if it cannot be eliminated.

Requirements for Cargo Ships

There are at present no regulations in regard to the stability of cargo ships, but most of them built in this country are designed to be capable of maintaining sufficient stability in normal operation to withstand flooding of any one compartment. The convention adopted by the Conference in London this year does provide, however, that stability information be supplied to ships' officers.

Under present conditions, it is generally not feasible in a cargo ship to space bulkheads close enough to insure that the ship would stay afloat under all conditions of two-compartment damage. In the case of shelter deck vessels, the tonnage rules described in last month's article offer a decided handicap in that 'tween deck bulkheads must have tonnage openings. If these bulkheads could be made watertight to the weather deck, it would in many cases be possible to attain a two-compartment standard.

Passenger Ships

Requirements for passenger ship stability are based on the U.S. Coast Guard regulations, and on the somewhat more strict standards set up in Senate Report No. 184 (*Morro Castle* and *Mohawk* Investigations) which are not mandatory, but are often voluntarily adopted as a standard.

The general effect of both of the above standards is to require that the ordinary intermediate type passenger-cargo vessel carrying up to several hundred passengers meet only a one-compartment standard for damaged stability. On the other hand pure passenger ships may be required to meet a two-compartment or even higher standard.

Many authorities feel that notwithstanding the actual requirements, any passenger vessel should meet at least a two-compartment standard under reasonable assumed conditions.

The added safety of a two-compartment over a one-compartment ship is very great, and insofar as damaged stability is concerned, the higher standard is not usually as difficult of attainment as might be expected, provided that longitudinal and horizontal subdivision can be eliminated or their effect minimized.

Required GM

The results of the damaged stability calculations are usually expressed in the form of a curve showing the minimum permissible (or "required") GM at different drafts. It becomes an operating problem then to make certain that the GM is at all times equal to or greater than that indicated by the required GM curve. (See the article on stability in the April issue of LOG).

Of course, the stability of a ship at any time depends to a great extent on its loading. The Coast Guard's policy is quite flexible regarding the manner in which the required stability is obtained in service. Loading and operating data may be set up to show conditions with various amounts of cargo stowed either homogeneously or with any reasonable vertical distribution found in the actual service of the vessel. These data are used for guidance in the operation of the ship and as the basis for the Coast Guard's "Stability Letter."

It is the purpose then of damaged stability studies and requirements to insure with the minimum of operating restrictions that the ship will have sufficient stability not only to safely surmount the ordinary perils of the sea, but to have a good chance of surviving in case of a serious accident.

A discussion of possible steps to be taken in case of damage will be given in a subsequent article. But the most effective steps are those that are taken *before* damage, i.e. the maintaining of adequate stability in routine operation.

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BOILER FEED SYSTEMS AND CONTROLS

By ROBERT P. GIBLON
Marine Engineer
George G. Sharp

On steam propelled vessels where more than one boiler is fitted, two basic types of boiler feed systems are installed, namely the common and unit types.

The common type of feed system is so termed because it employs a single feed pump (having a standby) that is used to serve the feed requirements of two or more boiler units through a common line. This system was the usual installation on older vessels where Scotch boilers were installed since multiplicity of boilers was necessary due to the limited steam generating capacity of each boiler unit, while on the other hand the feed pump capacity was seemingly not limited. Thus, the practice developed of using a single feed pump to service several boilers. To control the feed to each boiler manually adjusted feed checks were used.

Water Tube Boiler

With the advent of the water tube boiler, the capacity limitations of the earlier Scotch designs were removed and it was no longer necessary to use more units than the minimum required by considerations of flexibility, reliability and general safety. In general, this led to the installation of only two boilers aboard most vessels. The water tube design, due to its relatively small water storage capacity, brought the need for the development of a reliable automatic control of boiler feeding. Also since this design of boiler was suitable for the generating of steam at higher pressures, and since in general higher pressures were used, special considerations had to be given to the design of the feed pumps. This resulted in the elimination of the direct acting reciprocating steam feed pumps except for standby purposes and the installation of turbo-driven centrifugal pumps. The use of the centrifugal pumps resulted in smoother delivery of feed to the boilers and tended in general to reduce maintenance of the feed pumps, piping and boilers.

Fuel Economy Developed

As a later development, in an endeavor to improve fuel economy, the motor driven triplex reciprocating plunger pump was installed in lieu of the centrifugal pumps, since on a medium sized power plant a gain in pumping efficiency of 35 to 40 per cent could be obtained. These pumps were generally designed with speed control of 50 per cent, and when lower pumping rates were desired the excess feed was bypassed through suitable piping and a control valve back to the pump suction.

Whenever the common type of feed system is installed two separate sets of feed lines must be installed as required by the U. S. Coast Guard and the Classification Societies. One set of piping is called the main feed and the other the auxiliary feed. Both piping systems must be fitted with two manually operated feed check valves as well as a cutout valve at each boiler. A single element direct acting feed water regulator valve is generally installed in the main feed line to each boiler to control the level of water in the boiler drum. It is located between the two manually operated feed check valves and it is designed to open when the water level in the drum goes down and close when the level rises. The valve is not effected by the boiler steaming rate but only by the water level in the drum. As these feed regulator valves open or close, the feed pump delivery pressure decreases or increases.

Therefore, it is necessary to provide some means of maintaining a nearly constant feed pump delivery pressure which should be sufficiently high to de-

(Continued on Page 54)

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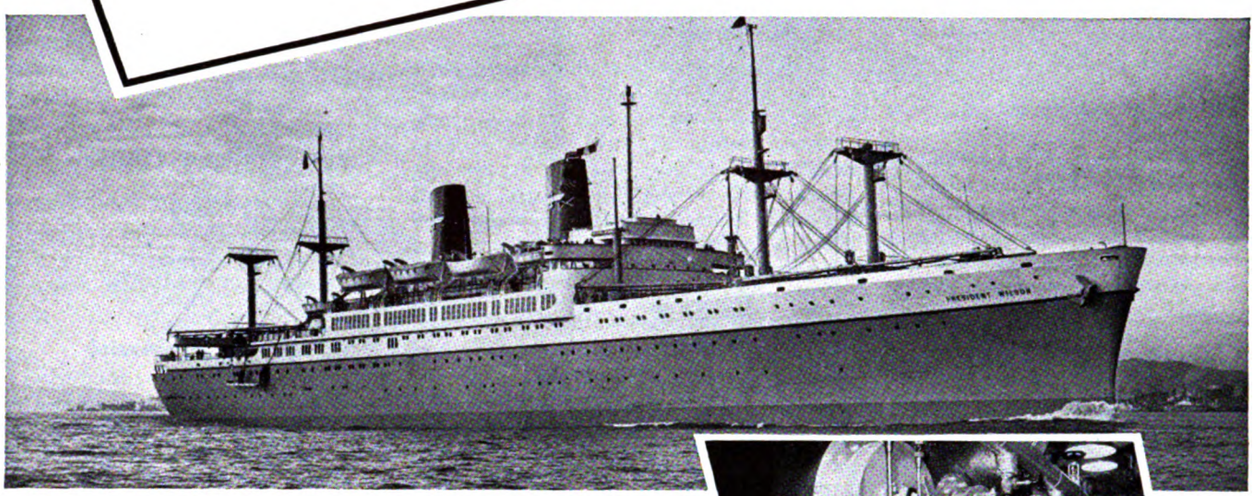
PRESIDENT WILSON
goes into service



...powered by C-E Boilers

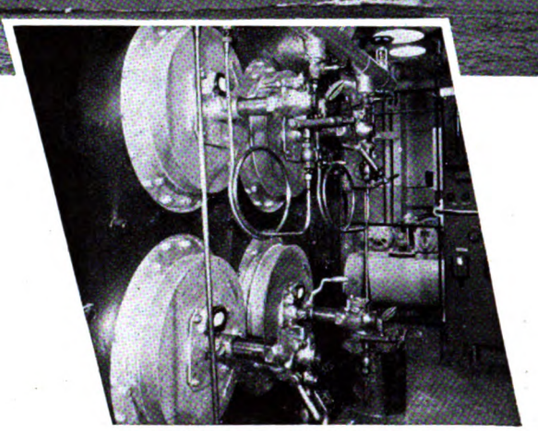
Joining her sister ship, the PRESIDENT CLEVELAND, in trans-Pacific service, the PRESIDENT WILSON, of the American President Lines, sailed for the Orient on her maiden voyage May 8.

Like her twin, the WILSON represents the finest modern luxury-liner construction and the two vessels, built by the Alameda Yard of Bethlehem Shipbuilding Corporation, have been watched with interest by all shipping men. They are the largest American-built vessels since the AMERICA and the largest ever to be built on the West Coast.

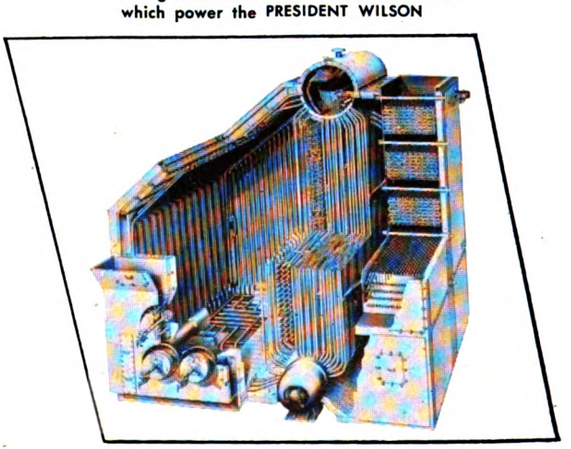
Four C-E Marine Boilers, Type V2M, power the WILSON. Identical boilers have already amply demonstrated their efficiency on the CLEVELAND, in service now for more than six months. Each boiler is designed to supply 40,000 lb of steam per hr at 600 psi and 840 F under normal operation, with an overload capacity of 44,000 lb of steam per hr.

High pressure, high temperature developments of C-E in the marine field are daily proving their value, not only on the new President liners, but on other notable post-war ships.

B-245



Firing front of one of the four C-E Boilers which power the PRESIDENT WILSON



Cut-away section showing internal construction of the boilers.

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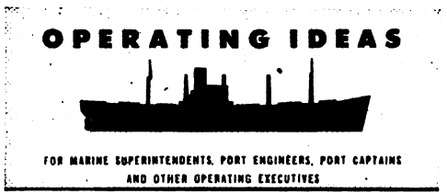

(Continued from Page 51)

liver water to the boiler while not too high so as to blow through the feed system relief valves. Direct acting steam pumps and turbine driven centrifugal pumps are therefore fitted with governor valves that are designed to maintain a fixed feed discharge pressure. These valves are set at a pressure high enough to deliver feed to the boilers irrespective of the rate of evaporation. This type of control valve is wasteful of pump power since the discharge pressure of the pump is considerably higher under normal power conditions than is necessary for feed delivery because the discharge pressure is set for maximum delivery of feed when the boilers are steaming at a pressure near the safety valve setting and at or near the maximum boiler steaming rate.

Differential Pressure Valve

Therefore on many vessels a differential pressure (sometimes called excess pressure) type of governor valve is installed and is connected so as to maintain a constant differential across one of the feed water regulator valves. The feeler lines to this valve are connected to the common main feed line near the feed regulator valve inlets and to the feed discharge from each regulator valve. Cutout valves are fitted in the feeler lines connected to the discharge from each feed water regulator valve, so that all may be secured except the one used to maintain the excess pressure. By maintaining an excess pressure across one regulator, all regulators will function to control the boiler water level. It will be impossible to automatically regulate the boiler water level if more than one feeler to the discharge side of the feed regulators are open, but it is necessary to have feelers to all regulator valves so that the proper line may be open depending on the boilers in service.

With the motor driven plunger pump a feed control of the differential type is installed. However, it is of the indirect type using compressed air or other means as a control medium. The differential obtained across the feed water regulator in turn operates a master differential regulator which in turn controls the air loading pressure of the control system. The control air then actuates the field rheostat of the motor and thus regulates the speed of the motor and capacity of the pump. When the feed pump reaches minimum speed and still less capacity is required the control air actuates a bypass valve which recirculates feed back to the pump suction.

Plunger Pump Satisfactory

When using a common type of feed system with boiler pressures of 450 psig and higher, it has been found that direct acting steam pumps are not a satisfactory type of main feed pump for constant service due to high pump maintenance cost and to the pulsating delivery pressure and resulting higher boiler maintenance costs. The motor driven plunger pump is more satisfactory but on the other hand has presented serious operating difficulties due to the complicated type of control required, and in general these difficulties have more than offset the advantages gained by increased pumping efficiencies.

To overcome some of the shortcomings of the common type of feed system and control and to permit use of the efficient plunger pump, the unit type of feed system was devised. In this system one pump (with a standby pump) is used for each boiler installed, and the feed systems for the different boilers are not interconnected. The feed piping is simple since only one line is run from the main pump and its standby direct to the boiler. The installation of manually operated feed check valves and feed water regulator valves is not necessary and should not be used. The installation on most of the vessels fitted with this type of system consists of motor driven variable stroke plunger type pumps for the main feed pumps and direct acting steam pumps as the standby units. Air operated controls are installed to control the delivery of feed to the boiler. Each boiler water level actuates its own control to set up the control air pressure which changes the stroke and delivery of the motor driven pump or throttles the steam control valve of the standby pump. The action is direct and simple.

Advantages of Unit Type

In general the advantages of the unit type of system over the common type of system are as follows:

1. The high pressure feed piping is smaller and less piping is required; since the line is sized for the capacity of one boiler and since an auxiliary feed line and manually operated check valves are not required.

2. The feed control system is simpler, more flexible and inherently more stable since only one control is involved in lieu of two separate controls as required on the common system.

3. Direct feeding results in a saving of feed pump power since the resistance offered by a feed water regulator valve is eliminated.

4. Each boiler having its own separate feed system practically eliminates the likelihood of a complete boiler plant shut-down due to the failure of the feed system.

5. Higher pumping efficiency is obtained as compared with the use of steam driven pumping units.

The disadvantages of the unit system are mainly the following:

1. More pumping units are required. For example, a two boiler installation requires four pumps, while a common type of system requires only two pumps. It is usual practice on most installations of common systems, however, to fit three feed pumps, one suitable for port duty, while a pump for port use is not necessary with a unit system.

2. The variable stroke pump is a more complicated pump mechanically than the type of pumps installed on the common system and thus involves maintenance difficulties that must be considered.

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Flywheel on Liberty

(Continued from Page 44)

shaft revolutions are recorded by electric impulses, relayed from a trip, set in coordination with the ship's revolution counter.

Test Proves Successful

Sea trials were conducted July 23, 1948, in the channel between San Pedro and Santa Catalina Island. Tape recordings were taken at various speeds in light and loaded conditions. At the same time, indicator cards plotting the pressures within the engine cylinders were made. These cards establish the indicated horsepower of the engine at various speeds and load conditions and in addition provide a means for balancing the engine.

Ideal conditions for wind and water prevailed throughout the sea trial and from preliminary calculations, the test was successful. The engine was operated at 76 RPM and there was no evidence of excessive torsional vibration. There was no evidence of excessive heat in No. 6 main bearing due to the increased bearing pressure from the added weight of the flywheel.

Final information regarding these tests is being formulated by the American Bureau of Shipping and the U. S. Navy and will be available after all calculations are completed.

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Two Volumes Are Published On Shipbuilding In U. S.

The Society of Naval Architects and Marine Engineers have issued two volumes entitled "The Shipbuilding Business in the United States of America," edited by Professor F. G. Fassett, Jr., of the Carnegie Institution of Washington. It is one of the first serious efforts on the part of a major industry in the U. S. to set out in sequence and detail the procedures and practices which have resulted in the successful functioning of the industry as a part of the American economic system of free enterprise.

Published by The Society of Naval Architects and Marine Engineers, 29 West 39th Street, New York 18, N. Y., the set of two volumes sell for $12.50 and will be mailed postpaid in the United States.

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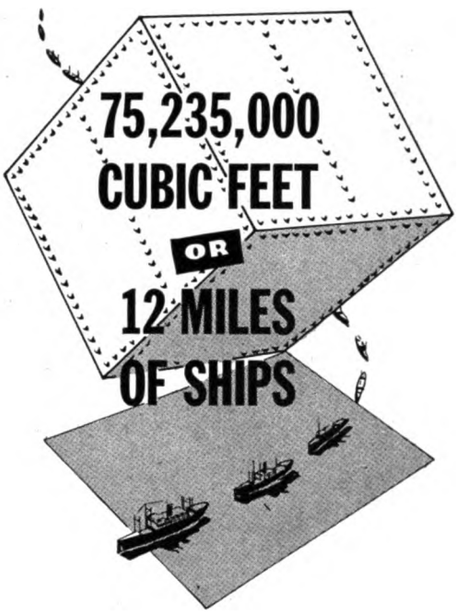

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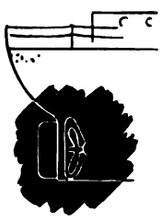

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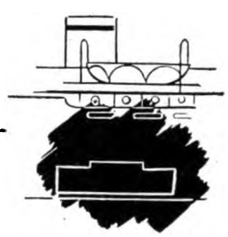

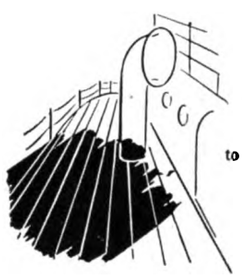

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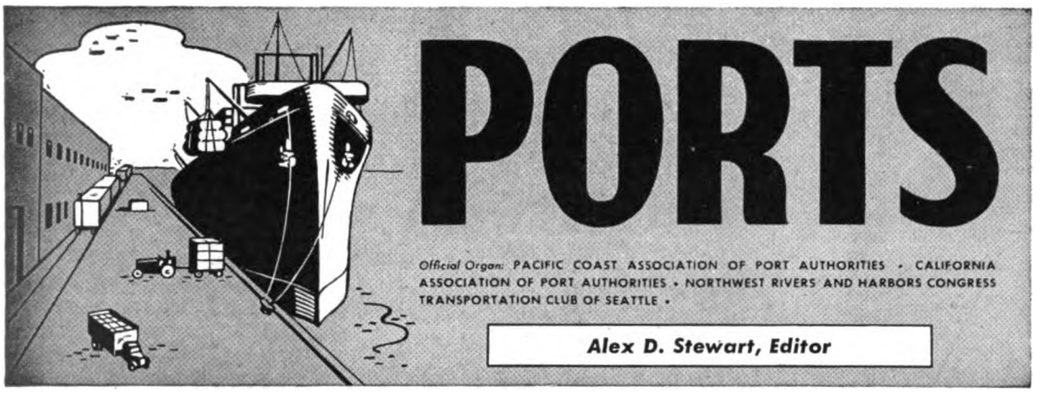

PORTS

Official Organ: PACIFIC COAST ASSOCIATION OF PORT AUTHORITIES • CALIFORNIA ASSOCIATION OF PORT AUTHORITIES • NORTHWEST RIVERS AND HARBORS CONGRESS TRANSPORTATION CLUB OF SEATTLE •

Alex D. Stewart, Editor

Labor, Rates, Service Discussed at Port Conference

Three major subjects—stabilization of labor, port rate uniformity and improvement of steamship services—made up the theme of the thirty-fifth annual convention of the Pacific Coast Association of Port Authorities held at San Francisco in July.

The convention, which was well attended, occupied three days of business sessions, panels, tours of the San Francisco bay area, luncheons, cocktail parties and the annual banquet.

John A. Earley, president of the Port of Seattle, was named president of the association for 1948-49, and Seattle was chosen for next year's meeting. Mr. Earley, who has been a vice president, succeeded Thomas Coakley as president. Mr. Coakley is president of the California State Board of Harbor Commissioners.

At the annual banquet, President Coakley presented life memberships in the association to four veterans:

Mark H. Gates, secretary of the California Board of Harbor Commissioners, who retired August 31st.

Frank G. White, who retired April 30th as chief engineer of the California harbor board.

K. J. Burns, Vancouver, B. C., vice president of the Pacific Coast association.

J. W. Brennan, who recently retired as director of the Port of San Diego.

The California Association of Port Authorities met at the same time in San Francisco with the Pacific Coast body and elected Claire V. Goodwin as president. Mr. Goodwin is president of the Oakland Board of Port Commissioners. No meeting place for the 1949 California association was named but it is understood the gathering will be in the southern section of the state.

The Oakland Board of Port Commissioners was host to the Pacific Coast convention at a luncheon and cocktail party at the Claremont Country Club.

Speakers at the convention included steamship men, union leaders, port officials, shippers and others.

John Kilpatrick, operating manager of the American President Lines, declared that stabilization of labor was the No. 1 problem facing the shipping industries today.

James S. Kearney, president of the San Francisco local of the ILWU, said inflation is making union members think twice before striking, added that the unions are greatly concerned over the decline in coastwise and intercoastal shipping and promised labor would strike only to defend its basic gains.

Charles L. Wheeler, executive vice president of Pope & Talbot, said the shipping situation would get much worse before it got better unless constructive steps are taken. He blamed the steady slump in shipping to the failure of shippers, steamship men and labor leaders to get together.

W. Reginald Jones, attorney for the Port of Oakland, and Irving Smith, attorney for the Port of Long Beach, presented a report on the tidelands legislation.

M. J. Buckley, senior vice president of the American President Lines, declared national disorders in the Orient and lack of finances to rebuild destroyed and antiquated port facilities were blocking Oriental trade.

Mark H. Gates, secretary of the San

1948-49 Officers of the Pacific Coast Association of Port Authorities:

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PORT AUTHORITIES MEET IN SAN FRANCISCO

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1948-49 Officers of the California Association of Port Authorities:

PRESIDENT—Claire V. Goodwin, Oakland
VICE PRESIDENT — C. S. Sampson, Los Angeles
TREASURER—Fred D. Parr, Richmond
SECRETARY — Lloyd B. Hughes, Oakland

NEW OFFICERS OF THE PACIFIC COAST PORT AUTHORITIES ASSOCIATION. . . . left to right: MARTEL WILSON, Stockton, Vice President; C. S. SAMPSON, Los Angeles, Vice President; J. A. EARLEY, Seattle, President; WARREN LAMPORT, Seattle, Secretary-Treasurer.

Francisco board, declared coastwise shipping has dropped from 757,000 tons annually before the war, to less than half of that total now.

Maitland S. Pennington, vice president, Pacific Transport Lines, reported on the work of the Western Transportation Committee, which is endeavoring to regain lost tonnage for Pacific Coast ports.

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New Orleans Transfers Bourgeois to Washington

E. S. Binnings, president of the Board of Commissioners of the Port of New Orleans, has announced the transfer of Lewis I. Bourgeois, director of commerce for the port, to Washington, D.C., and the resignation of L. L. Harvey, executive general agent at Washington.

"Realizing the importance of Washington as a great international trade center, the Board of Commissioners of the Port of New Orleans is convinced that the best interests of the port demand the transfer of Mr. Bourgeois to the nation's capital, where he will be in closer contact with foreign legations and their purchasing missions and the many governmental agencies which have controls over commercial, maritime and transportation activities," Binnings stated. He added: "In addition, the port is progressing industrially and Mr. Bourgeois will be most helpful to New Orleans and Louisiana in our program of industrial expansion."

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San Francisco's Port Problems Similar To New York Harbor

San Franciscans heard a vivid recital of the accomplishments of the bi-state Port of New York Authority when Austin J. Tobin, executive director of that organization, spoke before a capacity crowd at a Harbor Day Luncheon August 6 in the northern California metropolis.

Mr. Tobin described the Port of New York Authority as a self-supporting, non-political, regional agency of the States of New York and New Jersey which, over the past 27 years, has sold $567,000,000 in revenue bonds and has built or has under construction some $300,000,000 worth of bridges, tunnels, waterfront facilities, airports and consolidated terminals for trucks, buses and railroad freight.

"The regional problems of the San Francisco Bay area today would seem to be quite similar to the regional problems that brought about the creation of the Port of New York Authority—problems calling for integrated port development and planning, for consolidated union freight terminals and for the elimination of congestion, duplication and waste in the handling and flow of the ports' commerce."

Mr. Tobin commented on the movement for the organization of a regional port authority for the San Francisco bay area and closed his talk by saying:

"In the popular show, 'Annie Get Your Gun', there's a song: 'Anything You Can Do, I Can Do Better'. With the verve, enthusiasm and civic pride of this great San Francisco region, I am confident that anything we can do, you can do better."

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Seeks Liquor Imports Through Mobile Port

Alabama State Docks Director Henry W. Sweet wants to make Mobile one of the nation's major ports for imported liquors.

The docks director has been on a two-week trip in the east and mid-west with that as his main objective. He attributes the only occasional shipment of liquors now moving through the port to lack of planning for consolidating shipments abroad for movement through Mobile.

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Port of Houston Surpasses 1947 Cotton and Grain Records

The Port of Houston, Texas, ended the cotton season with receipts well above the previous year and with promising prospects for the new season, according to Port and Traffic Bureau.

The Houston Cotton Exchange reported net receipts rose from 1,378,697 bales, a gain of 435,597 bales, while shipments amounted to 1,278,282 bales. Of the shipments, 678,111 bales were exported, and 600,171 bales moved by rail.

Cotton moved across the Houston wharves to more than 26 foreign countries. England with 133,098 bales led the list, and was followed closely by China, which received 116,150 bales; Japan with 105,966 bales, and France, 97,919 bales.

Grain movements during the month of July, the port reports Houston surpassed all records not only in receipts, but also in shipments, in the number of railroad cars unloaded and in the number of ships loaded.

Receipts amounted to 7,037,717 bushels, shipments to 6,907,987 bushels, while 3887 cars were unloaded and 24 ships were filled to capacity.

The previous largest month for receipts was 5,973,185 bushels in July, 1947, and for shipments, 5,107,458 bushels in August, 1947.

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L.A. Harbor Appoints Tom Maddox and C. W. Dayhoff

Two appointments were announced recently by Arthur Eldridge, general manager of the Los Angeles Harbor Department.

Thomas G. Maddox, well-known Pacific Coast steamship man, was named traffic manager of the Port of Los Angeles and Clancy W. Dayhoff, air transportation veteran, was made director of public relations.

Tom Maddox was with the Luckenbach Steamship Company for many years, serving in southern California and later as manager of the firm's Portland office. In recent years he has been in southern California as general freight agent for Williams, Dimond & Company, and district manager for the United States Lines.

Mr. Dayhoff will be in charge of the harbor's advertising, publicity and public relations. Recently he has been western director of public relations, route development and state relations for Trans-World Airlines.

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Seattle Preparing Application For Foreign Trade Zone

According to A. B. Terry, port commission secretary, the Port of Seattle is preparing for early filing of formal application for permit to the Federal Foreign Trade Zone Board for the foreign trade zone of the port.

"By the time the federal board's decision is made on this application, and before actual work would begin on preparation of the proposed site at East Waterway terminal for conversion to foreign trade zone use under federal regulations, we shall have ample time meanwhile to study the success or failure of the newly authorized foreign trade zone project in San Francisco," Terry said.

Terry also announced that construction of the modern administration building and other facilities for the port's huge Seattle-Tacoma International Airport between Seattle and Tacoma are proceeding "ahead of contract schedule, due to fine cooperation between the contractors and the port commission."

"It is now indicated that the $11,000,000 airport, financed partly by federal allotments, will be completed for full scale operation by early next spring," Terry said.

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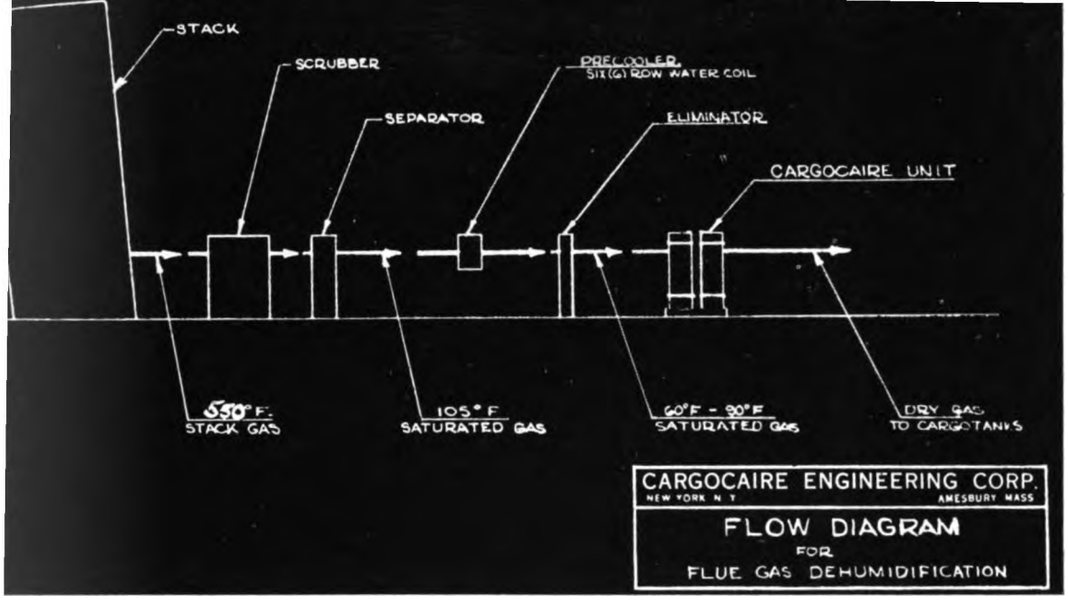


is to maintain a non-explosive condition in the tanks at all times and to prevent condensation and retard rust formation on the structural surfaces of cargo tanks and contamination of cargo in conjunction with cargocaire.

In the past, flue gas systems have had the disadvantage of enhancing corrosion due to the water vapor which began to condense as soon as it left the scrubber and when it arrived at the tanks. Dehumidification eliminates this condition. To prevent this condensation, the gas enters the Cargocaire dehumidifier where the dewpoint is lowered by the removal of moisture. The dried gas is then distributed to the cargo tanks.

The dried flue gas enters the tank and

Cargocaire Tanker System

(Continued from Page 35)

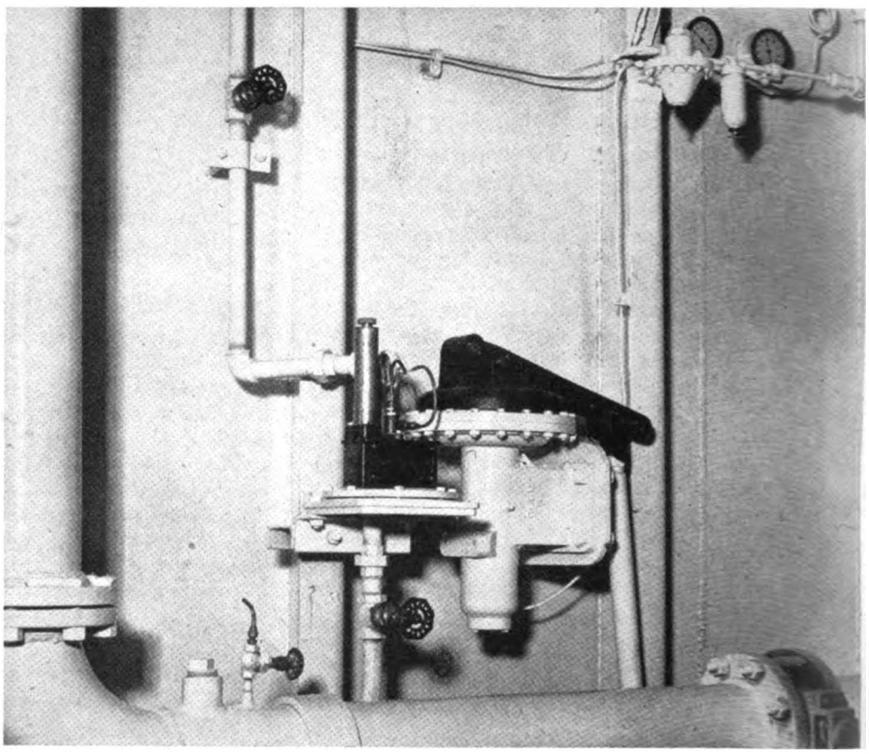
ing, dried air can be introduced through ship's cargo lines. Reduction of pressure in dry air main starts the Cargocaire unit automatically and continues operation until pressure is restored. Introducing air through the ship's piping system also provides protection for the piping against corrosion.

Cargocaire Makes Flue Gas System Profitable

The Cargocaire system can also be used in conjunction with a flue gas system when desired by installing a flue gas scrubber and cooler with suitable boiler uptake connections. Saving through elimination of corrosion will pay for both systems.

The flue gas system is a safety device for tankers. It consists of a system by which the gases emerging from the stack of the vessel are piped through scrubbers and coolers which remove soot and impurities also reducing the gas temperature. The gases are, of course, saturated with water vapor and in a very wet condition.

The purpose of the flue gas system



SAFETY SHUT OFF VALVE of the Hagan Pneumatic Control Type "D," prevents dried air or flue gas from backing up in the new Cargocaire tanker system. A sending head actuates the diaphragm operator which is connected to neoprene sealed butterfly valve in the discharge from blower to tank.

fills all the space left by the commodity as it is discharged. As this gas is mainly nitrogen and carbon dioxide, it is not inflammable, thus eliminating the formation of explosive mixtures and fire hazards. When the vessel is loading, this same dry inert gas mixture is ejected to the atmosphere through the vent. With full tanks, the expansion of dried gas will be handled through the vent system, additional dry gas being injected from the dehumidifier when tank pressures decrease to the desired setting. The control of dried gas distribution is automatic.

A safety control mechanism is provided to prevent back flow of gas from the tanks to the Cargocaire Unit. This control provides a definite shutoff in the event of mechanical or air failure when the system is in operation. The Hagan Corporation through Mr. Allen Geuder have contributed much valuable assistance in the development of simple pneumatic controls for the Cargocaire Dehumidified Ventilating System.

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   - b. By elimination of weak acids due to sweat.
   - c. By drying ballasted tanks within few hours after stripping.
   - d. By drying butterworthed tanks within few hours.
2. **Minimizes Cargo Contamination**
   - a. From condensed sweat—which can cloud lubricating oils or dilute special cargoes.
   - b. From Bloom Rust—which can discolor or degrade special cargoes.
   - c. From other tanks—because of the positive pressure supply and ventilation system.
3. **Minimizes Fire Hazards**
   - a. By gasfreeing in short time because of large positive ventilation capacity with dehumidified air.
   - b. By inerting tanks with flue gases, cleaned and humidified to prevent corrosion or contamination in tanks.
4. **Increases Tanker Earnings**
   - a. By increasing savings in maintenance.
   - b. By increasing life of ship's tanks and piping.
   - c. By increasing time at sea from quicker cleaning, gasfreeing and reduced shipyard time.
   - d. By outturning uncontaminated cargoes.
   - e. By safer carriage of mixed or special cargoes.

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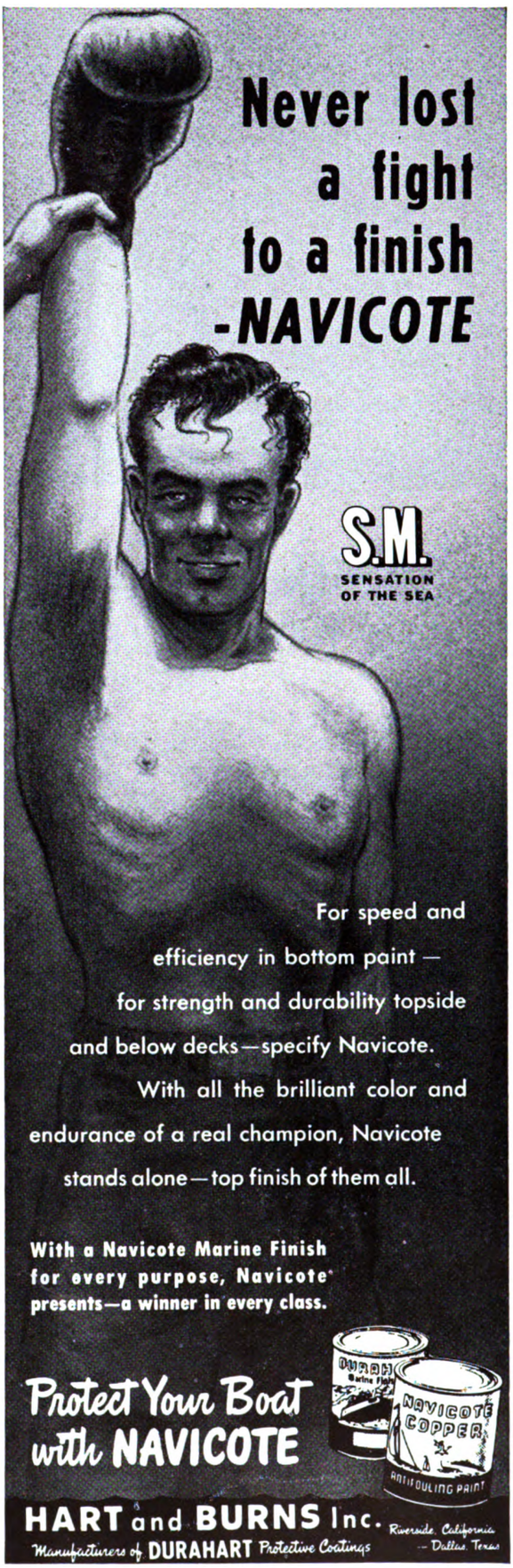

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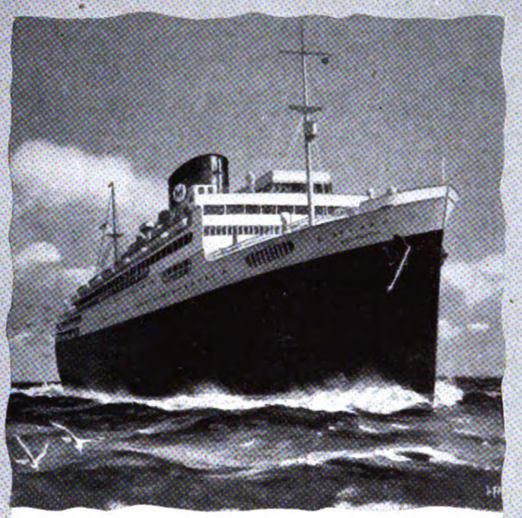

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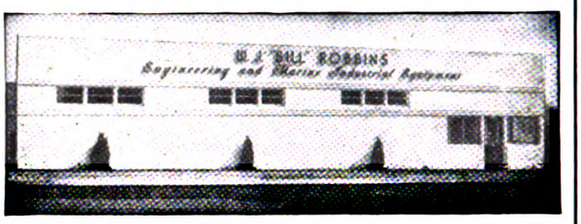

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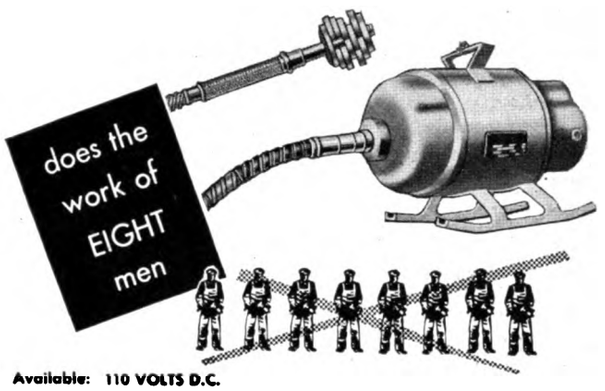

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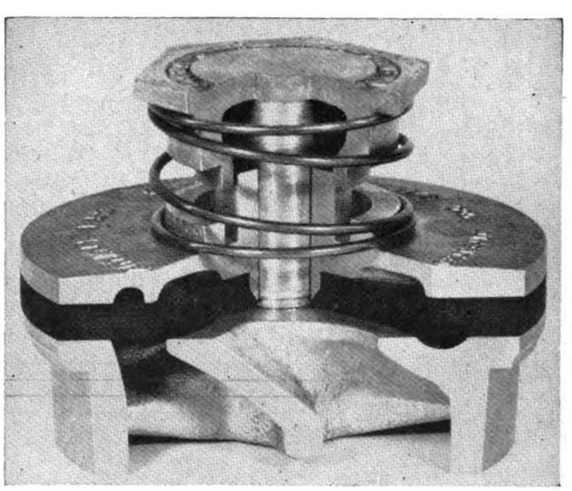

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EQUIPMENTALK

Marine Manufacturers Tell Their Stories . . .

GEORGE W. SMITH, JR., recently-elected President of De Laval Steam Turbine Co., Trenton, New Jersey, succeeding H. L. WATSON, who now continues his role in the company in the capacity of a Director and Chairman of the Executive committee.

De Laval Steam Turbine Elects Geo. Smith, Jr., President

George C. Stoddard, Chairman of the Board of Directors of the De Laval Steam Turbine Co., Trenton, New Jersey, has announced the retirement of H. L. Watson as president of the company, and the election of George W. Smith, Jr., as his successor. Mr. Watson will continue to be part of the company's management in the capacities of a director and chairman of the executive committee.

Before becoming associated with De Laval in 1947 as assistant to the president, Mr. Smith served successively as vice president and director of the White Motor Company, as works manager and a member of the executive committee of the Victor Talking Machine Company (now Victor Division of RCA), as manager of two divisions of Bendix Aviation Corporation, as a director of the Ohio Crank Shaft Company, and as chief engineer of the Naval Aircraft plant at the Philadelphia Navy Yard. More recently Mr. Smith has been engaged in industrial engineering consulting services as the senior member of the New York firm of Smith and Wood, Inc.

Mr. Watson directed the affairs of the company as executive vice president from 1935 to 1942 and as president since 1942. According to the company it was during his administration De Laval products were established as leaders in the marine and industrial fields which are supplied with reduction gears, worm and helical gears, steam turbines, generators, centrifugal and rotary pumps and centrifugal compressors.

⚓ ⚓ ⚓

Army Awards Sperry With Loran Contract

A contract for 175 loran receiving equipments was awarded to Sperry Gyroscope Company, Great Neck, New York, by the U. S. Signal Corps recently. The Army Transport Service, now engaged in a modernization program, will install the receivers aboard ships.

The competitive award to Sperry includes a committment for 175 sets of station spares and two sets of base depot spares. Loran purchased for Army transports indicated the increase in the peacetime use of this electronic system for determining a ship's geographical position in any weather, independent of celestial observations.

Forty-eight separate domestic marine operators and thirty-six foreign customers comprise Sperry's current customer list.

⚓ ⚓ ⚓

Pilot Marine Appoints New Representatives

C. Howard Leaf, chief sales engineer of Pilot Marine Corp., New, York, recently made a trip around the nation's seaboards conferring with the firm's established dealers and appointing new representatives in several ports.

In southern California he named Owe-son & Co., 110 West Seventh Street, San Pedro; in New Orleans, The Mississippi Valley Electric Co., and in Jacksonville, Florida, the Jacksonville Yacht Storage Co.

Toumey Electric & Engineering Co., San Francisco, represents Pilot Marine in northern California. Mr. Leaf spent some time with Harry Toumey, head of this firm.

Marine Specialty Co. has the Pilot line in Mobile, Alabama, and Intercoastal Electric Co. in Houston.

⚓ ⚓ ⚓

Fischer Named Vice President Sims Pump Valve

Raymond L. Fischer, sales manager, The Sims Pump Valve Company, 145 Hudson St., New York, was elected vice president of the company effective June 1st, according to an announcement by the company.

The Sims inclined port rotating pump valves are widely employed aboard tankers for their efficiency, increased capacity and economy of operation.

⚓ ⚓ ⚓

Dampney Company Add New South & Gulf Distributors

Three new marine distributors for the South and Gulf have been announced by The Dampney Company of America. The complete Dampney line of APEXIOR—THUR-MA-LOX protective coatings for metal are now available in Jacksonville, Miami and Tampa through Jacksonville Yacht Storage Company; in Galveston and Houston through Southwestern Marine & Supply Company, Inc.; and in Charleston, South Carolina, through the Marine Service Corporation.

PILOT MARINE CHIEF VISITS WEST COAST — left to right: HARRY TOUMEY of Toumey Electric and Engineering Company, San Francisco, and C. HOWARD LEAF, chief sales engineer of Pilot Marine Corporation, New York.

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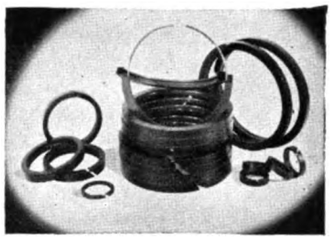
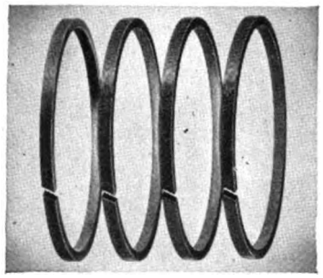
Expansion ring "floating" type, especially adapted for large, heavy-duty pumps. Long wearing with minimum friction.





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FRANK W. CROFUTT, Manager of the newly-opened New York sales office, 342 Madison Avenue, of Washington Aluminum Co., Inc. Crofutt formerly was associated with Marine Utilities Co.

D. M. Gibson Opens Marine Sales Quarters at Portland

D. M. Gibson, who was trial engineer for Kaiser Company at Portland and later with the Marine Commission there, has announced his opening of marine hardware and equipment warehouse and sales office at Portland, in quarters formerly used as main assembly building at the Kaiser Swan Island plant.

Cranes, cargo booms, steamboat jacks, thrust shafts, coupling bolts, lifeboats, ranges, ladders, paint, engine room instruments and controls are included in the items carried in stock. Facilities for warehousing and public storage and handling of materials are available.

Gibson sailed from 1928 to 1941 in tankers and freighters, eleven years of this period he was on tankers of the Standard Oil Company of California, working up from wiper to earn his chief engineer's license. He was trial engineer for Kaiser in 1941-1942. From 1942 to 1945 he was machinery inspector for the Maritime Commission at Swan Island, acting as senior inspector and acting principal inspector. He served as resident distribution analyst for the Maritime Commission, handling $46,000,000 in surplus shipyard equipment for turning over to WSA during 1945 to 1947. From November, 1947, to March, 1948, he served as port engineer for Pacific Tankers on both the East and West Coast.

NEW MARINE SALES QUARTERS have been opened in Seattle by D. M. Gibson, formerly trial engineer for Kaiser Company at Portland, and later with the Maritime Commission.

WESTERN SHIP SERVICE NOW REPRESENT SUMCO . . . left to right: PERRY ROACH, Superintendent; MURRAY SIMPSON, General Manager; BILL PAZ, Sales Engineer; CLIFF WHARTON, Outside Superintendent; all of Western Ship, San Francisco.

Jim Francisco Represents E. F. Drew in Los Angeles

New southern California representative for the E. F. Drew & Company, is Jim Francisco, whose office is at 1736 East 15th Street, Los Angeles. Warehouse stocks of the firm's Ameroid will be carried at 1220 West 9th Street, Long Beach.

Mr. Francisco brings to the Drew Company a background of wide marine experience, both in service at sea and in engineering affiliations with major shipbuilding companies on both the East and West coasts. During the war he was assistant general manager in charge of construction for Todd-Bath Shipbuilding Corp., South Portland, Maine. He was formerly assistant works manager of Penn - Jersey Shipbuilding Corp. in Philadelphia; marine superintendent for United Concrete Pipe Corp., Shipbuilding Division, California; and later served in the same capacity for California Shipbuilding Corp., Terminal Island, California.

REPRESENTING E. F. DREW & CO. in Los Angeles . . . JIM FRANCISCO.

Western Ship Service To Handle Sumco Products

Sherwood K. Summ, president of Sumco Products, Inc., Brooklyn, New York., visited the Pacific Coast in July and, while there, named Western Ship Service Company, 178 Fremont Street, San Francisco, telephone SUtter 1-8632, as Northern California sales and service representatives for the Sumco line of shipboard chemical cleaners—Aquakleen, Heaterkleen, Fuelkleen, Oilkleen, and Sumco Suds.

Head of Western Ship Service is Murray Simpson; Supt. is Perry Roach; Sumco sales engineer is W. J. Paz and outside superintendent is Cliff Wharton. Mr. Roach formerly was port engineer for the States Steamship Company and Mr. Paz recently was with the United States Army Transport Service.

While in the west, Mr. Summ conferred with his other dealers: Power Engineering & Supply Company, Seattle; Arthur R. Pegg, San Pedro and Boiler Engineering Service and Supply Company, Portland.

Western Ship Service has the exclusive right in the San Francisco Bay area to use the Sumco method of chemically cleaning boilers and heat exchangers. Western Ship has the proper equipment and their men have been trained in the Sumco procedure for chemical cleaning.

Sumco Products recently issued a handbook dealing comprehensively with the chemical removal of sludge, fire scale, water scale and general ship cleaning.

Paul Hiller, Wilmington, Handles "Pacific Fleet" Paints

"Pacific Fleet" marine paints are now being sold in the Los Angeles harbor area by Paul W. Hiller's marine supply store at Wilmington.

Handling this new paint line for Mr. Hiller are Walter Kemmerer and Carl Darrow. "Pacific Fleet" paints are manufactured by The Pervo Company, Los Angeles.

H. G. Rethmeyer, Pacific Coast manager for the marine and aviation divisions of Westinghouse Electric Corporation at San Francisco, has been named transportation sales manager.

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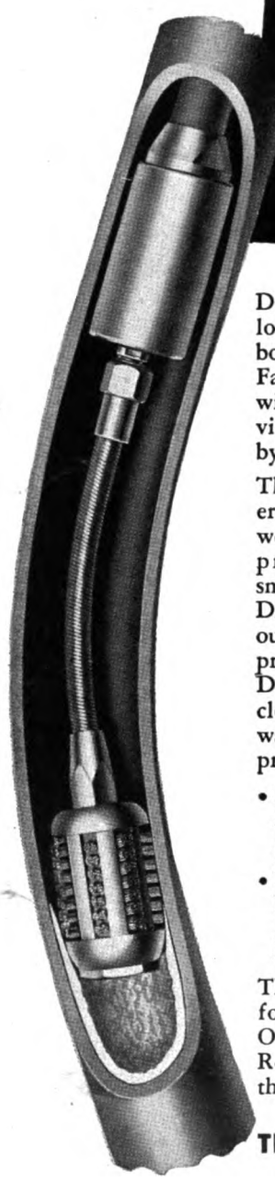

Down time for tube cleaning . . . low heat transfer efficiency . . . both can bloat operating costs. Fast and thorough tube cleaning with Wilson Tube Cleaners provides extra operating economies by *cutting these costs.*

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- *Rapid tube cleaning . . . faster turn-around in port when tube cleaning is necessary.*
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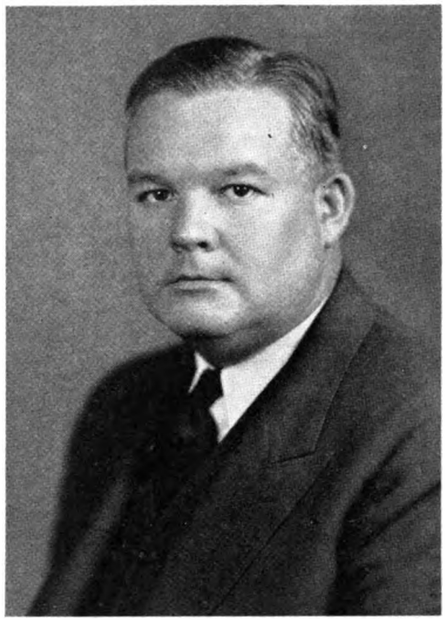


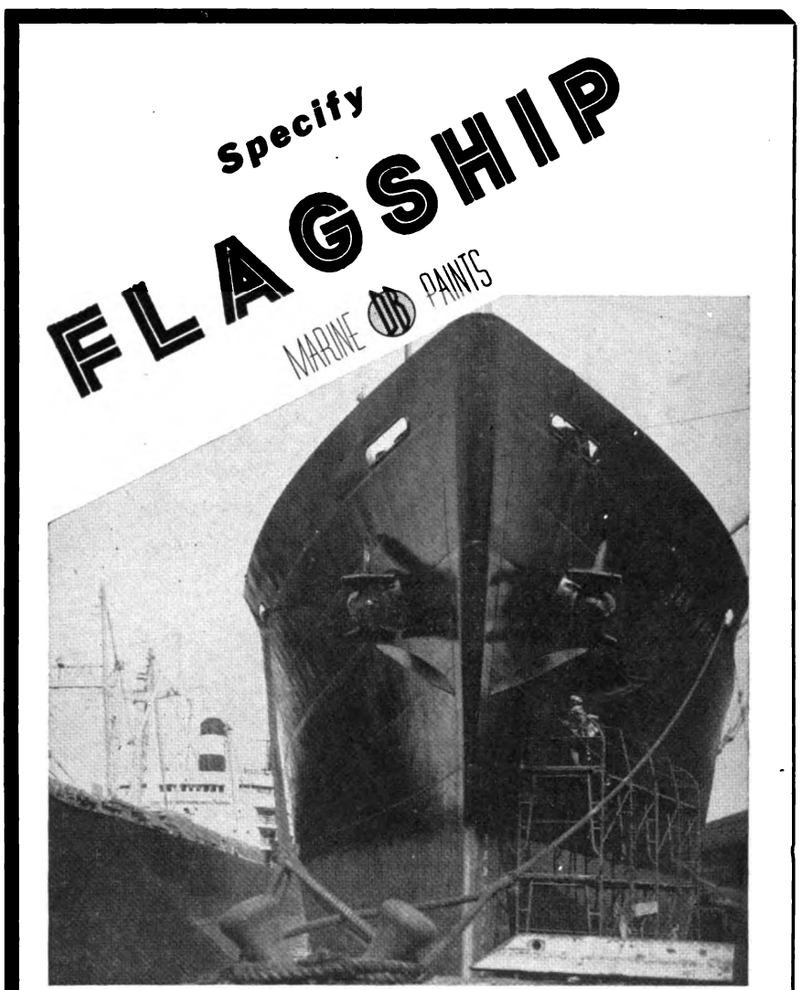
ELECTED PRESIDENT of The Sharples Corporation, centrifugal and process engineers, Philadelphia, is G. JOSEPH KEADY, formerly Executive Vice President of the firm. Philip T. Sharples, President, now becomes Chairman of the Board.

Combustion Engr. Appoint Chas. Johnson Marine Manager

Combustion Engineering Company, 200 Madison Avenue, New York, recently appointed Charles H. Johnson as manager of the marine department.

A mechanical engineering graduate of Notre Dame, Johnson spent some years as an engineer officer in the U. S. Coast Guard, resigning in 1919 with the rank of Lieutenant Commander. He then became associated with U. S. Steel Federal Shipyards as assistant to the chief engineer and in 1945 became chief engineer, which position he held until taking over his work with Combustion Engineering.

During the war he was granted leave to serve with the U. S. Maritime Commission as coordinator of engineering and as technical advisor to Vice Admiral Howard L. Vickery, vice chairman of the Commission. In this capacity he became widely known as an authority on propelling machinery.



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Reserve Fleet

(Continued from Page 39)

program. The administration of this program for the next fiscal year will employ twenty-three persons at a cost of about one-tenth of one percent of the money to be expended.

Why Cannot Vessels in Reserve Fleet be Used Instead of Building New Vessels?

The question is often asked, "Why can't the vessels in the Reserve Fleet be used instead of building new vessels?" That is much the same as asking, "Why can't a plumber remove anyone's vermiform appendix?"

Many of the vessels in the Reserve Fleet were built for a specific use. Some have been converted for military purposes during World War II, and they remain in that condition. To recondition these vessels for other specific purposes would be an expensive procedure and after reconditioning, the operator would still have a war veteran vessel.

Further, such reconditioned vessels would be in competition with newer and faster vessels which would, except in the bulk cargo trades, place them at a serious disadvantage.

The type of vessels now needed to round out a well balanced United States Merchant Marine are mainly passenger vessels. There are very few of these in the Reserve Fleet. Those in the fleet are mostly overage vessels and conversion to modern passenger liners would be very costly. Further, these overage passenger vessels were not built in accordance with the latest rules and regulations regarding fireproofing and compartation.

Reserve Fleet as Security Insurance

Notwithstanding the fact that some of the vessels in the Reserve Fleet might prove inefficient on competitive foreign trade routes, there are other serious considerations which prompted the Congress to establish the national defense reserve fleet. For instance, even if we had sufficient shipyards to build a large number of vessels in a short period of time, which we assuredly do not have at present, it would take from two to three years to duplicate the vessels in the Reserve Fleet. However, a Reserve Fleet of vessels needing war damage repairs and extensive voyage repairs is a doubtful asset in time of a national emergency.

Repairs to vessels in the Reserve Fleet have not been accomplished to date because every vessel was up for sale and it would not have been economical for the Government to repair vessels which might have been sold foreign or sold for scrap, but the time has now arrived where serious consideration is being given to repairing the best of these vessels. After repairs are completed, it is proposed to place such vessels in the statutory reserve as security insurance against any national necessity.

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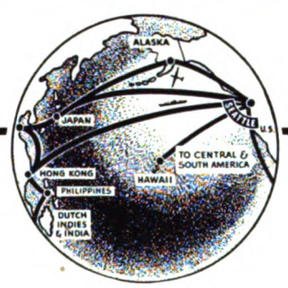

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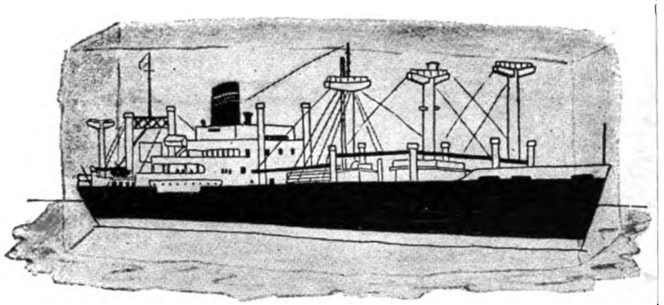

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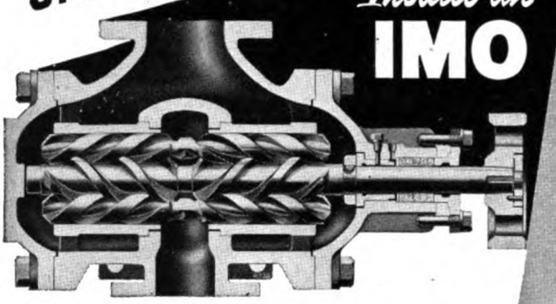

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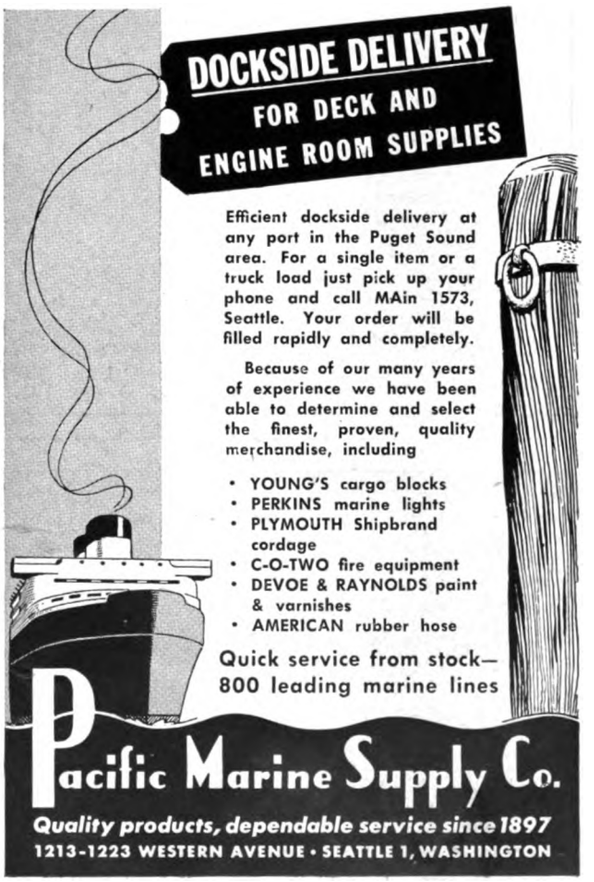

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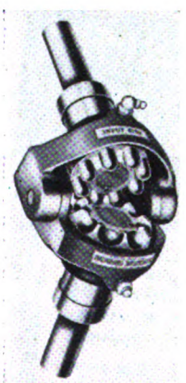

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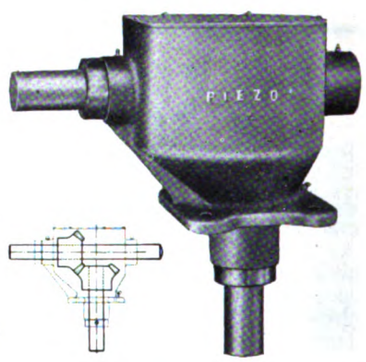

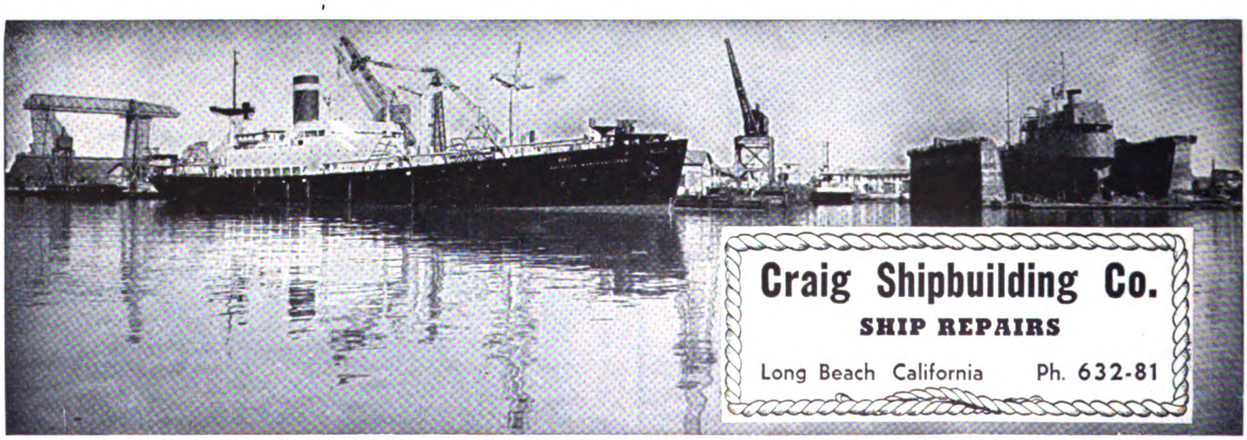

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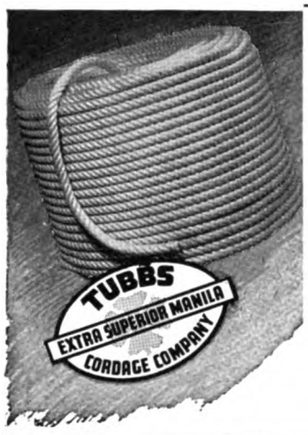

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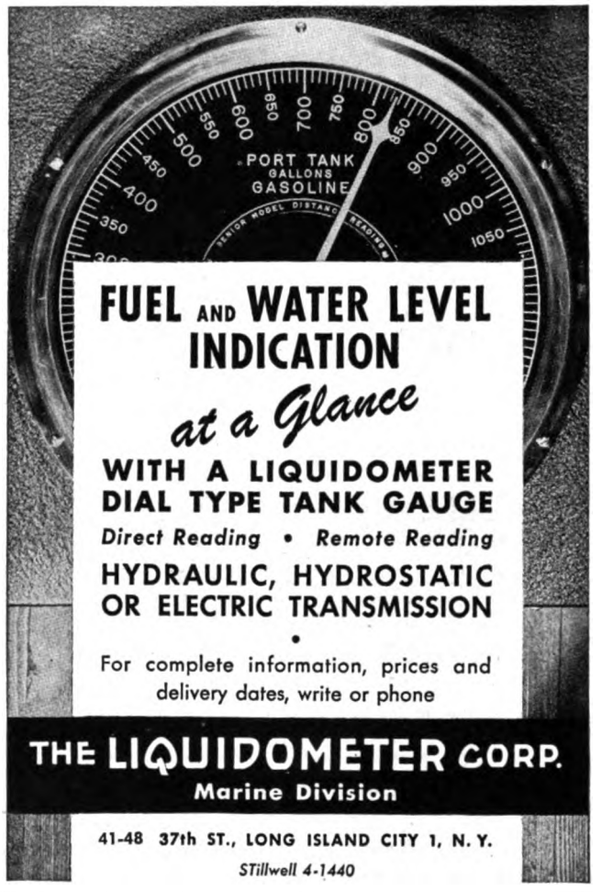

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ADVERTISERS' - INDEX -

Aerial Products, Inc. 16
Albina Engine & Machine Works 61
Alcoa Steamship Co., Inc. 6
American Brass Co., The 74
American Mail Line 71
Arnessen Electric Co., Inc. 61
Asbestos Supply Companies 72
Babcock & Wilcox, The—Refractories Division 19
Baier & Associates, L. S. 76
Baker Dock Co. 76
Bird-Archer Co. of California 73
Boland Machine & Manufacturing Co., Inc. 74
Bratsberg, Captain A. J. H. 76
California Ship Repair Corp. 74
Catalina Island Steamship Line 75
Cavanaugh Machine Works 74
Columbia Machine Works 75
Combustion Engineering 53
Commercial Ship Repair 7
Cordes Bros. 73
Craig Shipbuilding Co. 70
Curtis Bay Towing Co., The 45
Dahl-Beck Electric Co. 59
Dampney Co. of America, The 55
De Boom Paint Co. 67
Dee Engineering Co. 75
De Laval Separator Co., The 15
De Laval Steam Turbine Co.—IMO Pump Div. 69
Dravis Engineering & Machine Works 70
Duke's Packing Co. 73
Ets-Hokin & Galvan 60
Everett Pacific Shipbuilding & Dry Dock Co. 65
Fairbanks-Morse & Co. 28
Foster Wheeler Corporation 27
General Electric Co. ..... 20 & 21
General Engineering & Dry Dock Corp. 72
Gibson, D. M. 52
Gigy & Associates, M. J. 74
Gladding, McBean & Co. 76
Gow, Alexander, Inc. 75
Griffiths & Sprague Stevedoring Co. 63
Gulf Shipbuilding Corp. 68
Hagan Corporation 23
Hanson, H. C. 76
Harris, Manly S. 76
Hart & Burns, Inc. 59
Hiller, Paul W. 75
Hough & Egbert Co. 73
International Paint Co., Inc. 8
Isherwood & Co., Ltd., Sir Joseph W. 76
Jeans, Captain Harvey A. 76
Liquidometer Corp., The 71
LOG Yearbook, The 2
Long Beach, Port of 52
Lubaid Co. ..... Inside Back Cover
Luce & Co. 66
Lykes Bros. Steamship Co., Inc. 69
Marden & Hagist 66
Marine Electric Co. 70
Marine & Industrial Supplies & Service Inc. 75
Marine & Industrial Supply, Inc. 74
Marine Service, Inc. 55
Metropolitan Plumbing Supply Co. 72
Moore & Co., Engineers, C. C. 19
Moore-McCormack Lines 62
Morrison & Bevilockway 73
Nickum & Sons, W. C. 76
Nordberg Manufacturing Co. ..... Front Cover, Page 3
Northwest Marine Iron Works 63
Nystrom, Captain E. W. 76
O'Donnell Copper Works, E. M. 75
Oxi Corporation 18
Pacific Marine Supply Co. 69
Perry, L. C. 76
Piezo Manufacturing Corp. 70
Pilot Marine Corporation 10
Propeller Club of the United States, The 12
Puget Sound Bridge & Dredging Co. 75
Puget Sound Freight Lines 75
Radiomarine Corp. of America 25
Raytheon Manufacturing Co. 29
Refractory Coatings Co. 72
Refrigeration Components 69
Robbins, W. J. "Bill" 60
Rober Co., W. H. 73
Rothschild-International Stevedoring Co. 76
Seaboard Machinery Corp. 9
Sea-Ro Packing Co., Inc. 63
Seaside Supply Stores, Inc. 73
Seattle Marine Surveyors 76
Seattle, Port of 68
Shell Oil Co. 17
Sherritt & Headman 73
Sims Pump Valve Co., Inc. 61
Skinner Engine Co. 46
Socony-Vacuum Oil Co., Inc. ..... Inside Front Cover
Sopac Ship Maintenance 49
Sperry Gyroscope Co., Div. of The Sperry Corp. 13
Standard of California 11
Submarine Signal Company 30
Sumco Products, Inc. 71
Swett & Co., George E. 66
Swett-Stone Corp. 65
The Texas Co. ..... Outside Back Cover
Trenko, William D. 74
Thorpe & Son, Inc., J. T. 74
Todd Shipyards Corp. 14
Toumey Electric & Engineering Co. 72
Tubbs Cordage Co. 71
United Fruit Co. 22
Western Asbestos Co. 71
Western Electric Corp. ..... 4 & 5
Western Machinery Corp. 76
Wickwire Spencer Steel Division 1
Wilson Inc., Thomas C. 65
Winter Co., E. V. 59

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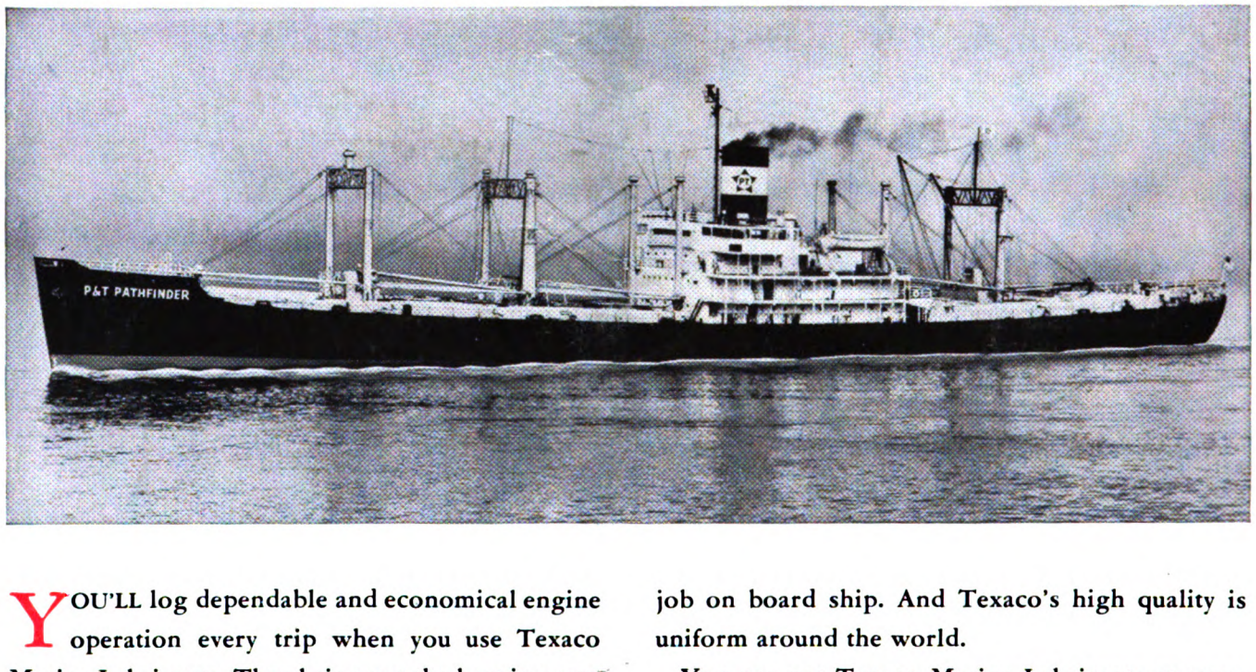

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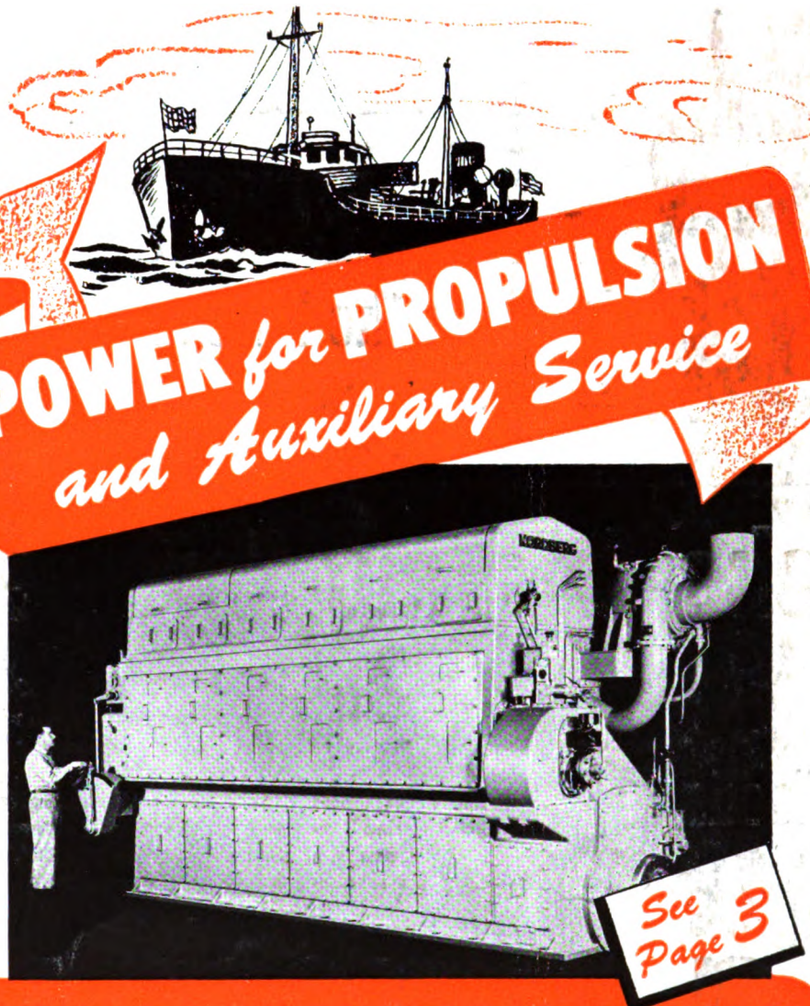

See Page 3

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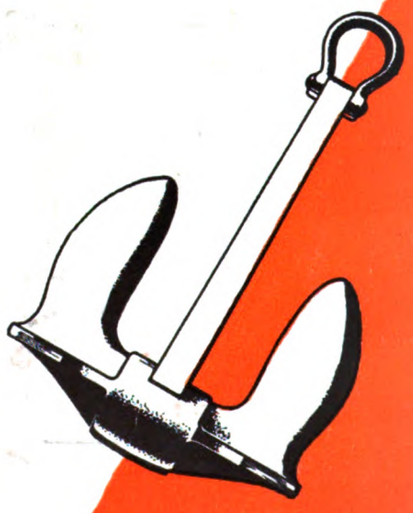

OCTOBER 1948
Volume 43 • Number 11

EDITORIAL INDEX ON PAGE.....29
ADVERTISERS' INDEX ON PAGE 72

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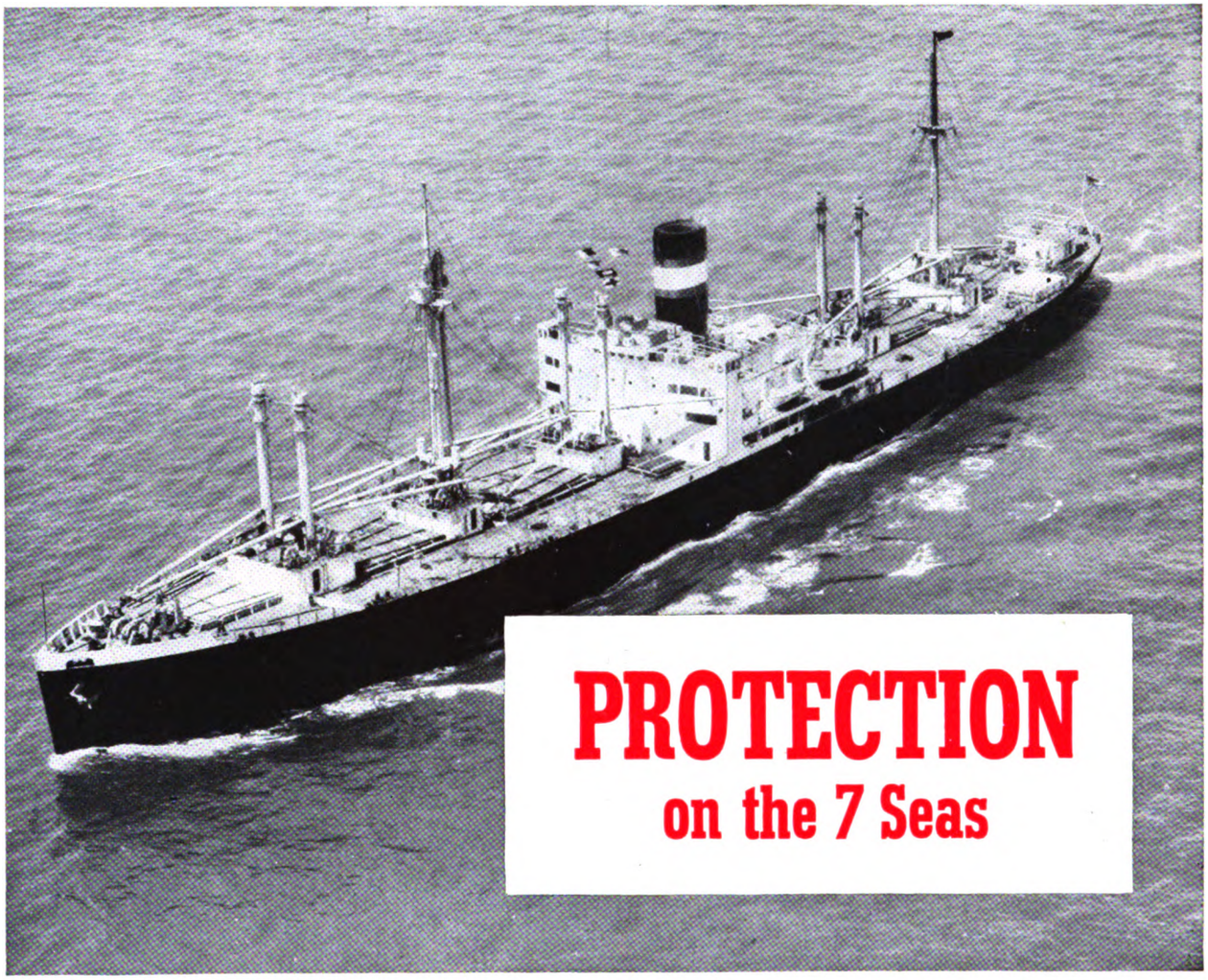

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"Sludge in tanks, difficult pumping, dirty heaters, poor combustion, bad firesides, high fuel consumption were *all* corrected by AMEROID" —This is a typical statement of port engineers who are now using AMEROID Complete Fuel Oil Treatment and CO_2 service aboard their ships.

AMEROID Fuel Oil Treatment service program includes instruction to engineers and maintenance of simplified CO_2 equipment for efficient steam generation at no service charge.

AMEROID

Complete Fuel Oil Treatment and CO_2 Service

1. Dissolves all types of sludge—heavy settled-out ends and emulsions.
2. Cleans fuel oil transfer system.
3. Restores fuel oil heaters to original condition.
4. Creates uniform fuel oil.
5. Conditions fuel oil for complete combustion.
6. Eliminates manual cleaning of burner-tips—just soak in treatment.
7. Saves repairs and labor, and improves operating efficiency.
8. Noticeably reduces soot deposits on decks.
9. Gradually removes old soot and slag.
10. Improves firesides of boilers.
11. Harmless to handle.
12. Lowest cost treatment — only 50 gal. for 10,000 barrels fuel oil.

E. F. DREW & CO., INC.

Marine Department • 15 East 26th Street, New York 10, N. Y.

Complete AMEROID Service by E. F. Drew & Co. engineers is available in principal seaports in the U. S., Canada, Panama Canal Zone, Argentina, Brazil, France, Italy and the Union of South Africa.

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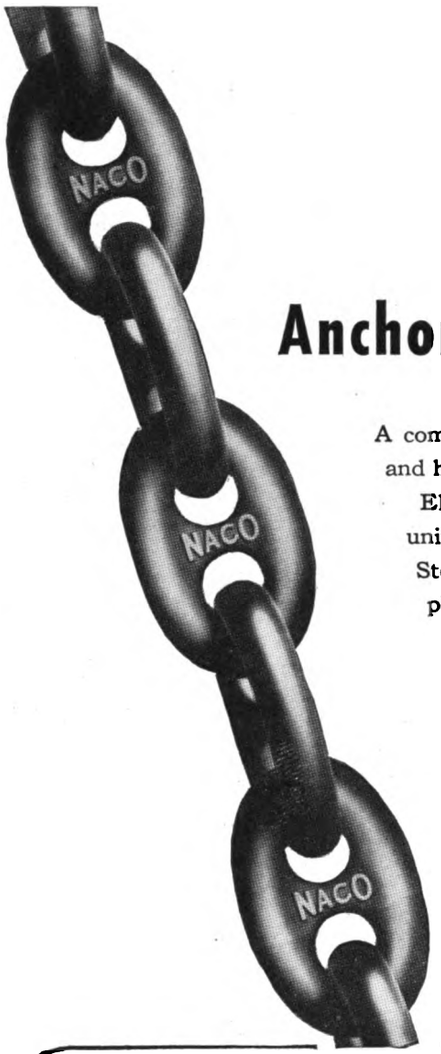

NACO

Anchor Chain and Joining Links

A combination that saves time when paying out and heaving in the anchor.

Elimination of all special links and shackles, uniformity of links and extreme strength of Naco Steel are features that have put Naco Chain in first place for dependability and smooth operation.

Naco Stud Links are made in one piece of metal having a minimum tensile strength of 100,000 lbs. per square inch.

JOINING LINKS OF EQUAL STRENGTH

E-Z and National Joining Links and Anchor Joining Links are of similar size and shape to the chain with which they are used. Made of the same steel as the chain, they're proof tested to the same loads.

You'll have the finest combination of speed and safety with NACO Chain and Joining Links.

E-Z Anchor Joining Link

National Joining Link

M&S Co.

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NACO ANCHOR CHAIN

TRADE MARK

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

Cleveland, Ohio

The LOG, published monthly, semi-monthly in July, by MILLER FREEMAN PUBLICATIONS OF CALIFORNIA, 124 West Fourth Street, Los Angeles 13, California, on the 25th of each preceding month. Executive, Advertising and Editorial Offices, 121 Second Street, San Francisco 5, California. Subscription (including Yearbook Number) in United States, $2.00 per year or $5.00 for three years; Foreign $3.00 per year. 25c per copy. Yearbook, $1.00 single copy. Entered as second-class matter February 5, 1946 at the post office Los Angeles, California, under act of March 3, 1879. Postmaster: Please send Notice 3578 to The LOG, 121 Second Street, San Francisco 5.

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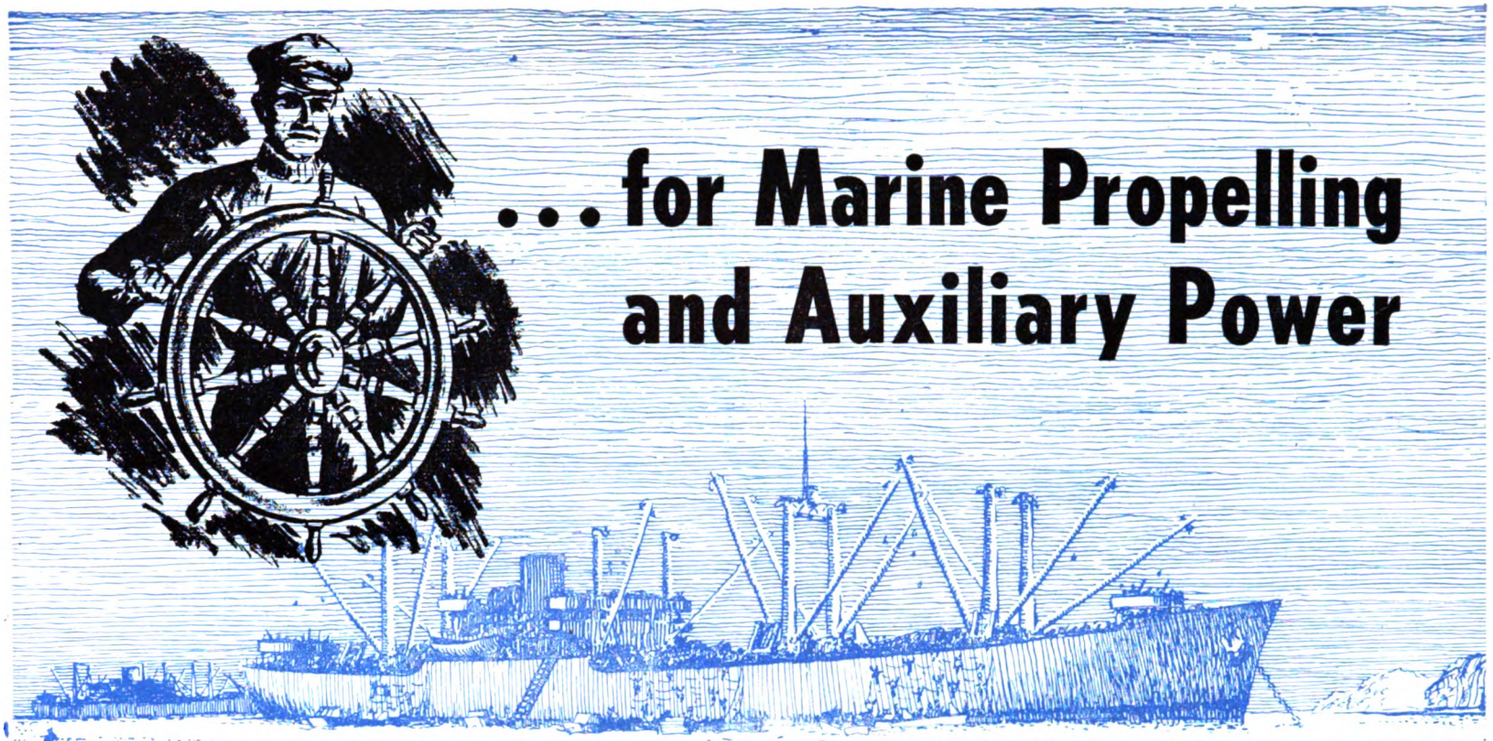
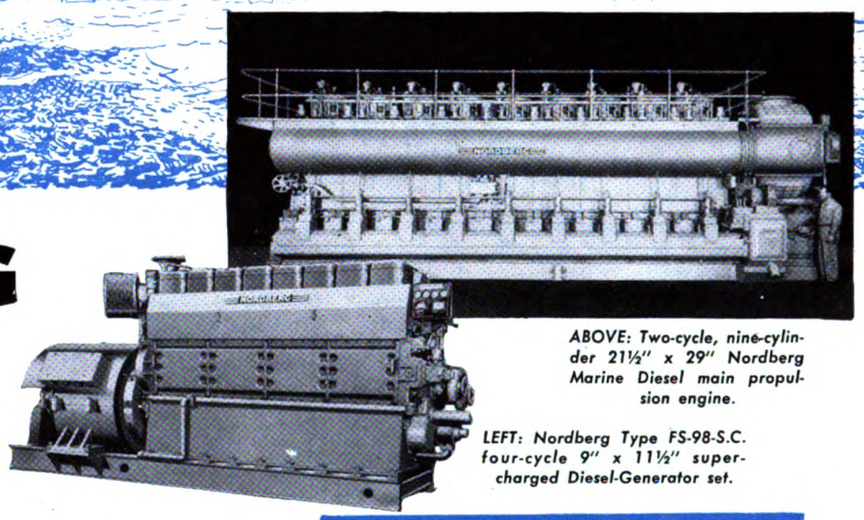


. . . for Marine Propelling and Auxiliary Power

. . . look to

NORDBERG DIESELS



ABOVE: Two-cycle, nine-cylinder 21½" x 29" Nordberg Marine Diesel main propulsion engine.

LEFT: Nordberg Type FS-98-S.C. four-cycle 9" x 11½" supercharged Diesel-Generator set.

STEADY, trouble-free power for main propulsion and auxiliary power requirements is obviously a necessity for successful shipping operations. When you choose *Nordberg* Diesel power to meet these needs, you can rest assured that you have a power plant specifically designed and built to stand the gaff of tough marine service . . . in fair weather and foul. The preference for Nordberg Diesel power on board hundreds of vessels of American and foreign registry provides ample proof of the dependable, long-life and low upkeep shipowners and operators have learned to expect from Nordberg main and auxiliary engines.

Write for factual literature describing the advantages of Nordberg Marine Diesel Engines for every marine power problem.

NORDBERG MFG. CO., MILWAUKEE 7, WIS.

NORDBERG Marine Diesel Engines are built to meet single and twin-screw main propulsion power requirements in a wide range of two- and four-cycle models ranging from 220 to 8500 shaft horsepower in a single engine.

NORDBERG Diesels for all marine auxiliary requirements include a full line of supercharged and non-supercharged models in sizes from 175 to 1750 H.P.

BUSCH-SULZER
A DIVISION OF NORDBERG

NORDBERG
DIESEL ENGINES

NORDBERG MACHINERY

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...since the white ships came...

Starting nearly half a century ago to sail to Caribbean ports for tropical fruits, the ships of the Great White Fleet began to serve the mutually beneficial trade between Middle and North America.

To coordinate cargo movements efficiently the United Fruit Company pioneered the first ship-to-shore radio in the Caribbean—known today as Tropical Radio Telegraph Company.

Passenger traffic as well as cargoes steadily increased—citizens of Middle and North America both, learning to know each other better.

Agricultural experiments with such new crops as abaca (manila hemp), the insecticide, rotenone, and African palm oil are progressing. Today these new crops, as well as the traditional nutritious foods of Middle America — bananas, cocoa, coffee, sugar — form part of the cargoes continually moving north, while—southbound—the Great White Fleet carries the products of northern farms and factories.

Harbinger of all this was the first white ship that sailed so long ago . . . and of much more, too . . . of the growing understanding and friendship between the Americas. The day by day contacts of thousands of individuals form the foundation of the practical Good Neighbor Policy.

GREAT WHITE FLEET

UNITED FRUIT COMPANY

General Offices: 1 Federal Street, Boston 10

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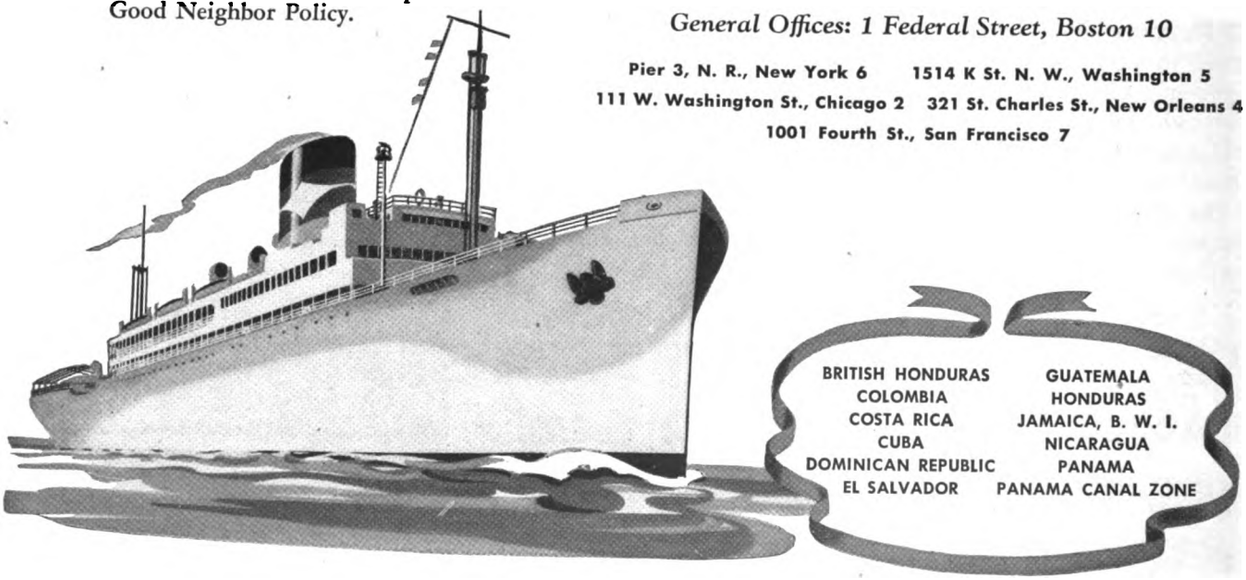

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Shell scientists believe you can profit by knowing about

SHELL TALONA OIL

developed to be the world's finest heavy duty oil

Figure what oil breakdown can cost you

With sludge, carbon and lacquer come ring-sticking . . . lowered efficiency and engine wear. And your cost is more than repair and replacement. The *time out for overhaul* runs operating costs way up . . . and cuts profits way down.

Nine years work went into Shell Talona Oil

A hundred or more formulas were developed and tested by Shell Research to find ways to strengthen oil . . . help it resist acid, sludge, carbon and lacquer formation. Yes, and *reduce engine wear.*

One oil, now marketed as *Shell Talona Oil,* was in a class by itself. In the most grueling tests, Shell Talona Oil kept sludge to a harmless minimum; kept bearings free from corrosion; kept pistons and rings virtually free of carbon and lacquer deposits. And as for wear —it couldn't be measured by ordinary standards on pistons or cylinder walls.

It pays off to you this way

In high speed Diesel and heavy duty gasoline engines, Shell Talona Oil promises less engine wear . . . longer operation at peak efficiency. Fuel economy should improve. And with proper care of your air cleaners and oil filters, periods between overhauls should lengthen considerably.

Ask your Shell representative for Shell Talona Oil. It's on sale now—and there's absolutely no other like it.

ARE YOU ABSOLUTELY SURE YOU ARE GETTING ALL THAT'S NEW IN LUBRICATION?

Your Shell Lubrication Engineer can make a complete study and analysis of your plant and machines . . . give you engineering counsel, advice on new lubricants and their application . . . help you set up schedules and controls for each and every machine. For that kind of service, call in your Shell Lubrication Engineer.

SHELL

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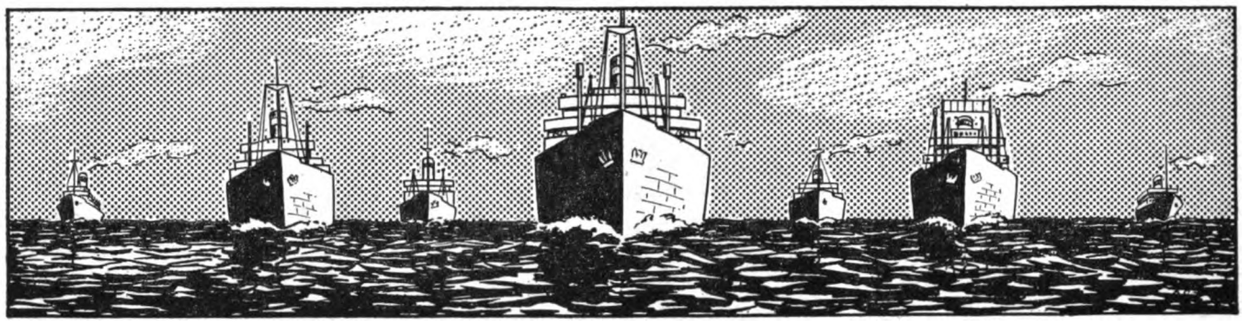

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The American Merchant Marine Looks Ahead!

THE American Merchant Marine Conference, sponsored by The Propeller Club of the United States in conjunction with its Twenty-Second Annual Convention, will be held in New York, October 13, 14 and 15th, 1948.

The Conference theme will be "The American Merchant Marine Looks Ahead!" Problems of vital concern to the American Marine Industry growing out of the period of world reconstruction and the rehabilitation of our domestic and foreign trade will be presented and discussed by recognized authorities. The Conference will concentrate the experience and wisdom of outstanding leadership upon subjects of utmost importance affecting the future of the American Merchant Marine.

Panel Discussion meetings will be held on October 13, 14 and 15th; the American Merchant Marine Conference Luncheon and Session on Thursday, October 14th; Propeller Club Convention Session on Friday, October 15th; and on the evening of that date, the annual American Merchant Marine Conference Banquet.

The necessity for constructive and coordinated effort is more apparent today than ever before. . . Your cooperation and participation are needed in this program to foster the best interests of the American Merchant Marine as an essential factor in the national defense and our economic welfare. . . Arrange now to attend the American Merchant Marine Conference and to take part in this important annual gathering of the American Marine Industry.

AMERICAN MERCHANT MARINE CONFERENCE

THE WALDORF-ASTORIA — NEW YORK

October 13, 14 and 15th, 1948

For Complete Details and Advance Program, Address

The Propeller Club of the United States

National Headquarters

17 Battery Place - New York 4, N. Y.

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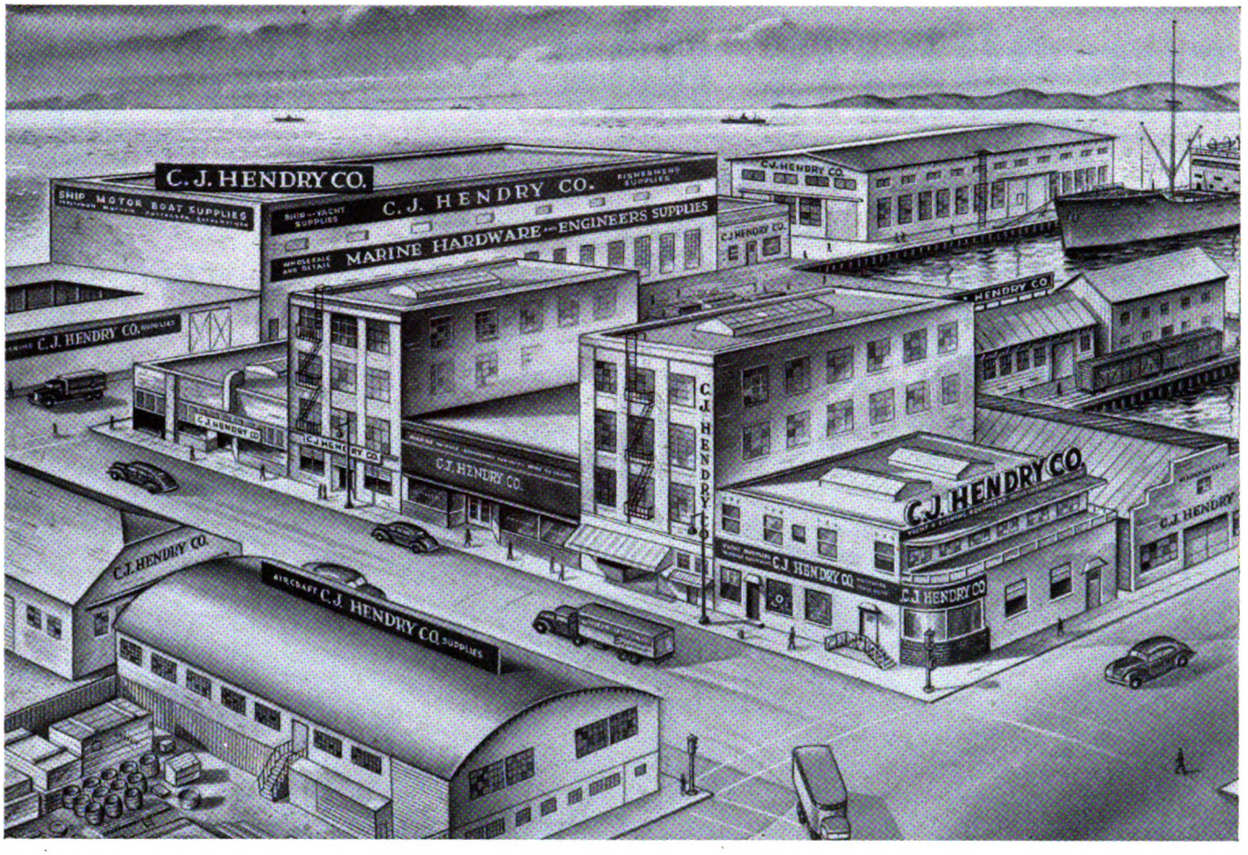
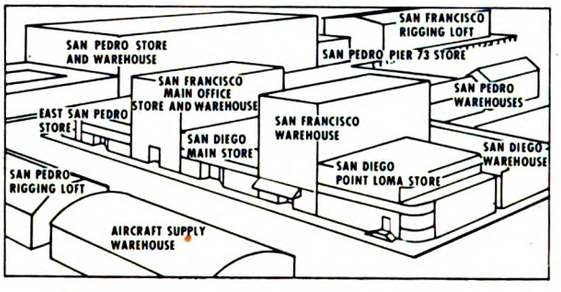


This is a composite picture of actual C. J. Hendry buildings, showing how they would look if grouped together.

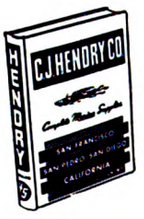
IT TAKES A SMALL CITY

to fill marine orders *Fast!*

So we can say "We have it in stock," no matter what you require, C. J. Hendry maintains a small city of warehouses, stores, and lofts. The policy of being ready to deliver practically anything *from stock* has built the C. J. Hendry Company into the world's largest ship chandlers. Through associations built up during the past 82 years, this company is able to offer every benefit you might obtain direct from the factory, plus immediate service—plus the convenience of placing one order with one company for all your supplies.



C. J. HENDRY CO.



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27 Main St.

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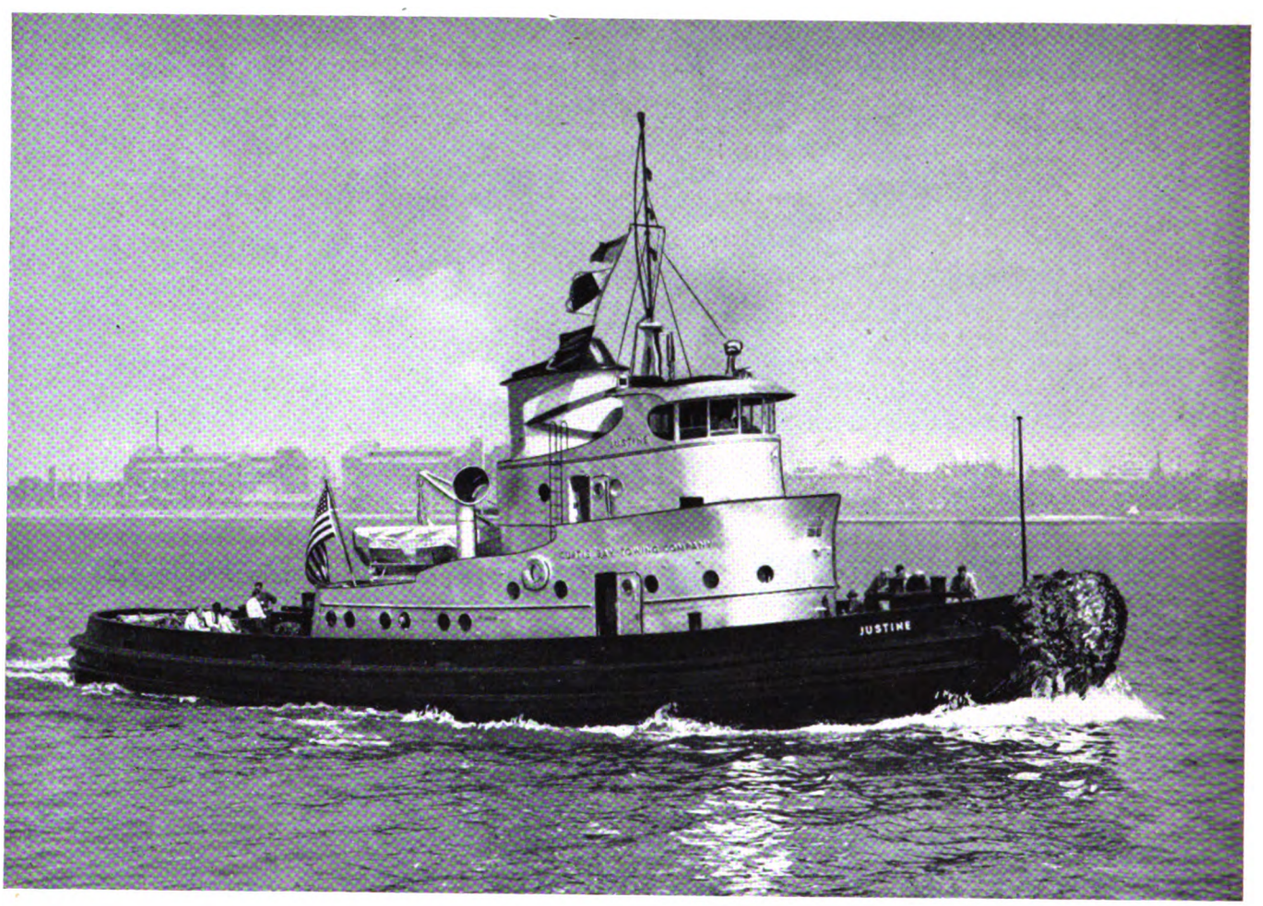
THE CURTIS BAY TOWING Co.

1501 MERCANTILE TRUST BLDG.

BALTIMORE 2, MARYLAND

PHONE: CALVERT 4400 CABLE AND RADIO: "CURTISBACO"



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OF PENNSYLVANIA

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PHILADELPHIA 7, PA.

PHONE: LOMBARD 3-3977 CABLE AND RADIO: "CURTISBACO"

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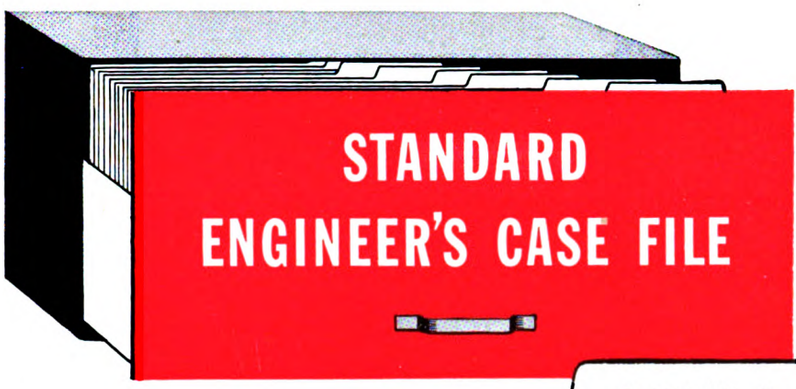
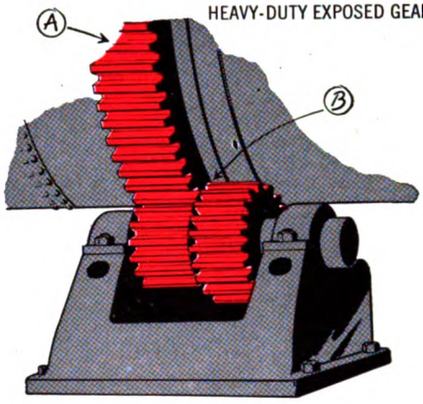


CASE 1042-A--KEEPING GREASE ON HEAVY-DUTY OPEN GEARS.



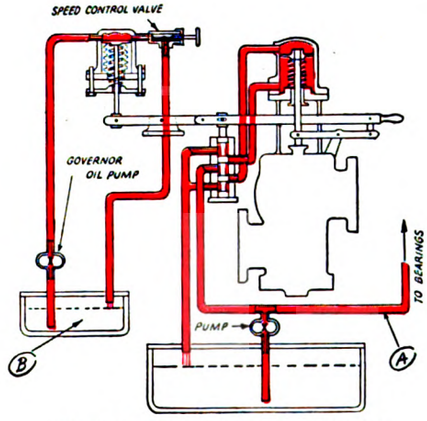
Extremely adhesive Calol Pinion Grease did not drip off a heavily-loaded open gear operating in moderate ambient temperatures. Several grades make it adaptable to both high- and low-speed open gears on hoisting units, cranes and other machines, wire rope, and grease-lubricated enclosed gears where climatic temperatures are low. Comes in four grades which are increasingly more adhesive: 0, 1, 2, 5.

A. Sticks to gear teeth and flows slowly back into place after displacement by pressure ... lack of drippage and waste promotes economy.

B. Tenacious lubricating film cushions shocks ... reduces frictional losses caused by sliding action of gear teeth.

Calol Pinion Grease sometimes requires heating for best application ... apply lightly on wire rope.

CASE 1048—STOPPING RUSTING, LACQUERING, SLUDGING IN STEAM TURBINES.



VARIABLE-SPEED OIL-RELAY GOVERNOR

Charges of inhibited Calol OC Turbine oil in various size turbines gave service many times longer than normally obtained with straight-mineral oils. Use in large and small units ... ring-oilers, circulating oil lubricating systems and oil-actuated governor relay systems. Comes in four grades: 9, 11, 15, 19.

A. Contains highly effective corrosion inhibitor and has excellent metal-wetting ability. Keeps moisture in oil systems from contacting metal.

B. Oxidation inhibitor resists deterioration of oil and sludge formation caused by heat, moisture, air, dirt ... prevents plugging of oil lines.

Calol OC Turbine Oil in regular service showed no increase in acidity after several years ... turbine parts remained in same condition as when installed ... water and solid contaminants separated readily from oil in centrifuging or filtering systems.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20, California.

RPM CALOL

FOR EVERY NEED A STANDARD OF CALIFORNIA JOB-PROVED PRODUCT

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ALCOA *sails the* CARIBBEAN

American businessmen often see only the picturesque and romantic beauty of the Caribbean. But beneath its lush, tropical exterior are thriving, worthwhile markets for thousands of products made in the U. S. A. How are they paid for? With exports of bauxite, sugar, cocoa, petroleum and scores of other basic products we need. Serving the freight and travel needs of this growing area is a day in, day out job for the many ships of Alcoa's busy fleet. Alcoa Steamship Company, Inc., 17 Battery Place, New York 4, N. Y. or One Canal Street, New Orleans 16, La.

ALCOA STEAMSHIP COMPANY, INC.

OFFICES IN: CHICAGO, MOBILE, MONTREAL, NEW ORLEANS, NEW YORK, NORFOLK, ST. LOUIS, TORONTO

This advertisement in leading magazines is helping to acquaint the public with the excellent freight and travel facilities now offered by ships of the American Merchant Marine.

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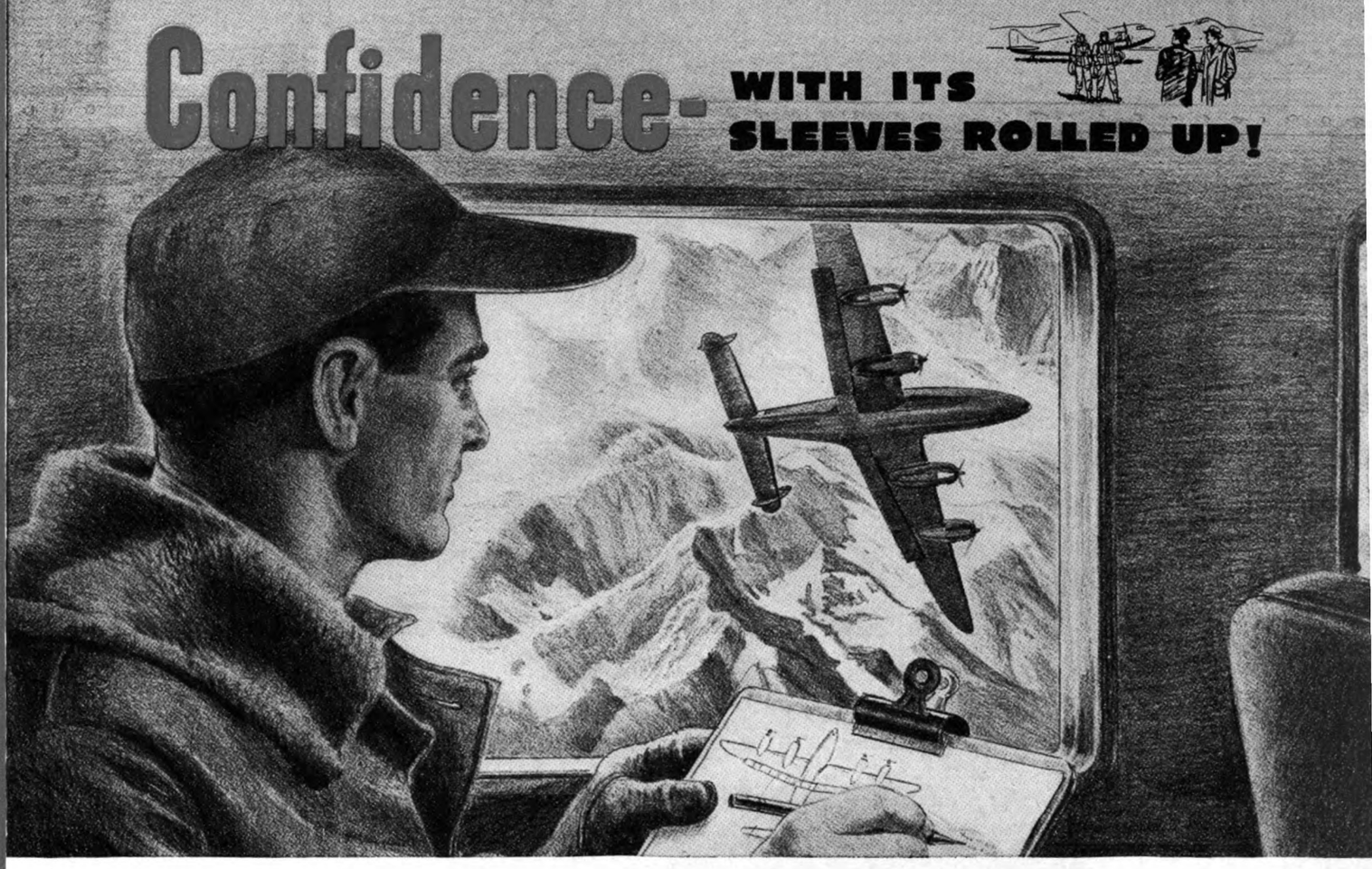
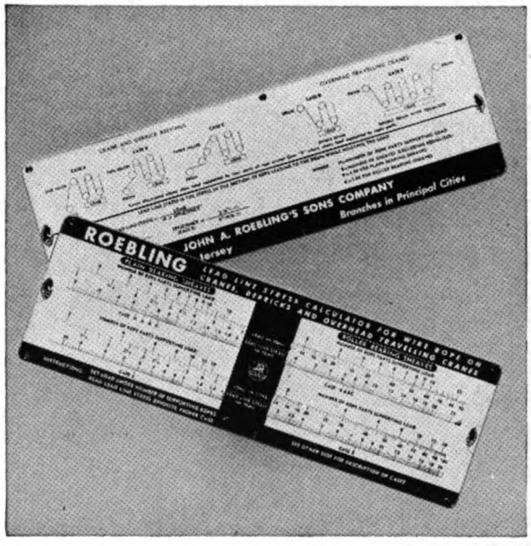
Confidence- WITH ITS SLEEVES ROLLED UP!





YEAR BY YEAR, planes grow bigger ... faster and safer. Man has unbounded confidence in his ability to build better and better planes. Never satisfied, he experiments and tests tirelessly, and aviation progresses.

With similar vision and confidence, Roebling has been pacemaker in the development and manufacture of products essential to the transportation and other industries. The active, widespread confidence it has won among technical men and operators throughout industry is Roebling's proudest asset. Look to Roebling for continued leadership ... continual improvement in its products and engineering ... continual progress.

WHAT SIZE OF ROPE? HERE'S YOUR ANSWER—FREE

DATA used by Roebling engineers themselves are embodied in this unique "slide rule". It's the Roebling Lead Line Stress Calculator for wire rope ... tells you in a moment the safe and economical size of rope for every load ... gives the right answer for all types of crane, derrick, and overhead traveling crane installations.

Here's information you can accept and act upon with complete confidence ... just as you can specify Roebling "Blue Center" Steel Wire Rope for unsurpassed toughness, dependable reserve strength and the reduction of costly replacement shut-downs. Roebling was America's first wire rope maker, and "Blue Center" Steel Wire Rope is the finest that Roebling knows how to make.

Write for a Roebling Lead Line Stress Calculator — it's free. And let your Roebling Field Man tell you about installation and maintenance practices that prolong wire rope life. Call him at your nearest Roebling branch office.

JOHN A. ROEBLING'S SONS COMPANY OF CALIFORNIA
San Francisco Los Angeles Seattle Portland

A CENTURY OF CONFIDENCE ROEBLING

★ *WIRE ROPE AND STRAND* ★ *FITTINGS* ★ *SLINGS* ★ *SUSPENSION BRIDGES AND CABLES* ★ *AIRCORD, AIRCORD TERMINALS AND AIR CONTROLS* ★ *AERIAL WIRE ROPE SYSTEMS* ★ *ELECTRICAL WIRE AND CABLE* ★ *SKI LIFTS* ★ *HARD, ANNEALED OR TEMPERED HIGH AND LOW CARBON FINE AND SPECIALTY WIRE, FLAT WIRE, COLD ROLLED STRIP AND COLD ROLLED SPRING STEEL* ★ *SCREEN, HARDWARE AND INDUSTRIAL WIRE CLOTH* ★ *LAWN MOWERS*

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C-E powered ships inaugurate service to new Liberian Port

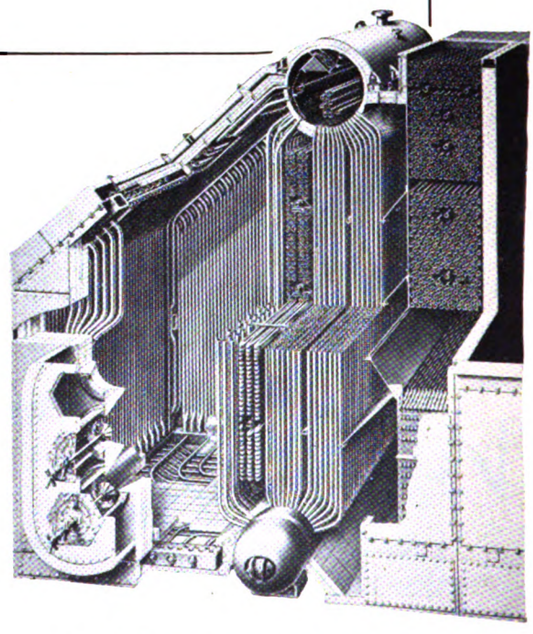
C-E powered ships of the Farrell Lines maintain a regular service to the newly completed twenty million dollar harbor of Monrovia, Liberia. This new harbor, considered the finest on the West African Coast, is already being used heavily as a transhipment port, and from it the Farrell Lines operate a coastwise service to smaller ports in Liberia, Sierra Leone and the Ivory Coast.

The AFRICAN PILOT, pictured above, is typical of Farrell Lines ships in the modern West African Fleet. Also C-E equipped are the AFRICAN PILGRIM and AFRICAN PATRIOT.

Farrell Lines not only maintain a fortnightly service to West Africa, but are the only line operating between the United States and all three ocean coasts of Africa. The C-E equipped ships AFRICAN SUN and AFRICAN DAWN operate principally in the weekly service to South and East Africa.

Wherever modern shipping plies the trade routes of the world, you will find C-E Marine Boilers maintaining their deserved reputation for efficiency, reliability and low maintenance.

B-249



The five Farrell Lines ships mentioned in the text are each equipped with 2 C-E Marine Boilers, Type V2M, each designed to supply, at normal capacity, 26,500 pounds of steam per hour at 465 psi and 765 F.

COMBUSTION ENGINEERING CO., Inc.

200 MADISON AVENUE • NEW YORK 16, N. Y.

C-E PRODUCTS INCLUDE ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT FOR STATIONARY AND MARINE APPLICATIONS

Pacific Coast: P. L. Johnson Co., Monadock Bldg., San Francisco, and Petroleum Bldg., Los Angeles

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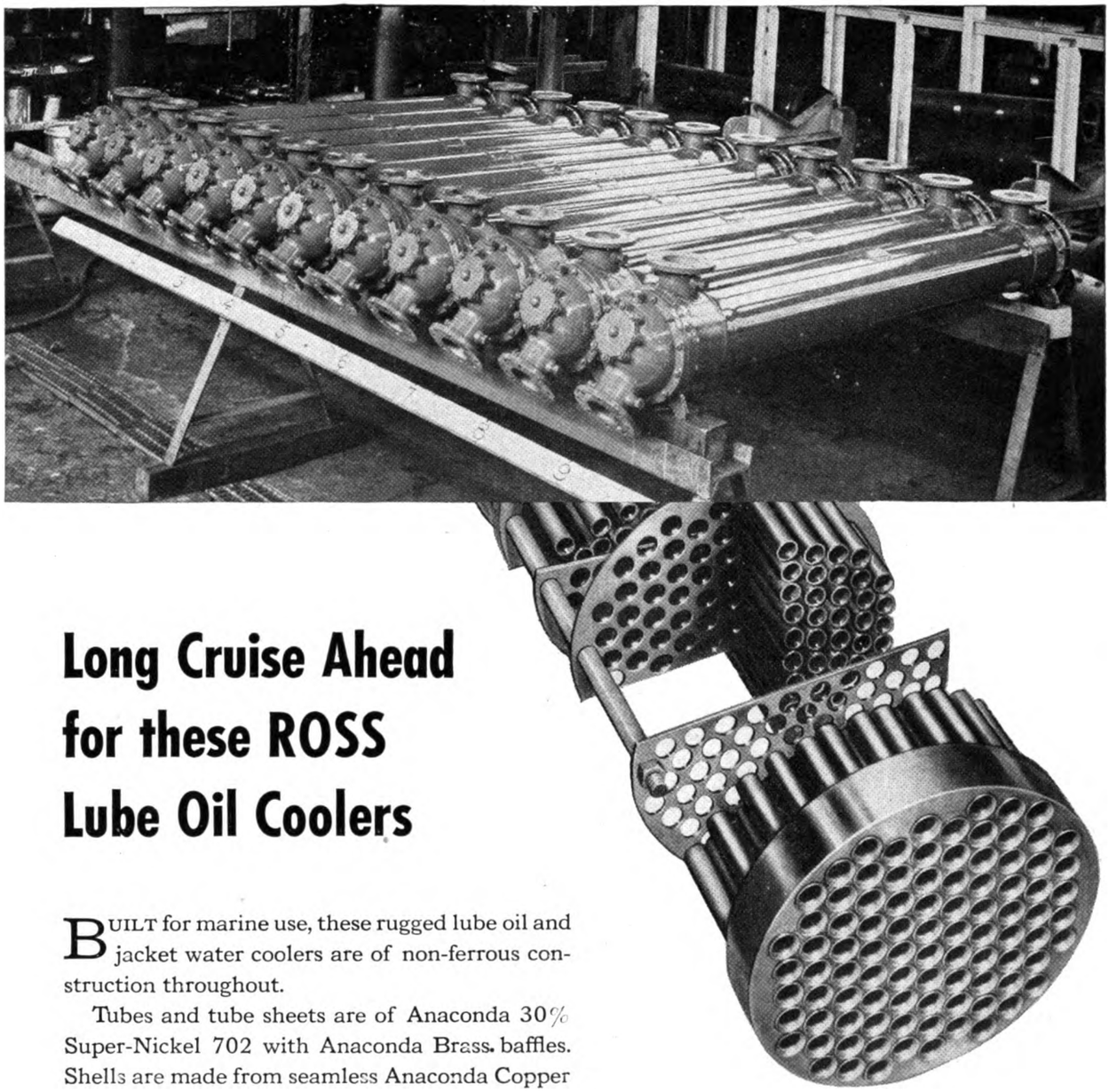

Long Cruise Ahead for these ROSS Lube Oil Coolers

BUILT for marine use, these rugged lube oil and jacket water coolers are of non-ferrous construction throughout.

Tubes and tube sheets are of Anaconda 30% Super-Nickel 702 with Anaconda Brass baffles. Shells are made from seamless Anaconda Copper Tubes.

Super-Nickel 702 is but one of eleven standard and several special alloys widely used in condensers and heat exchangers in the marine field, in public utility plants, petroleum refining and wherever long service under severe operating conditions is essential.

Engineers and equipment manufacturers are invited to use the broad experience and metallurgical knowledge of our Technical Department in determining the most suitable alloys for specific heat exchange requirements. For general information on Anaconda Condenser and Heat Exchanger Tubes and Tube Sheets, send for Publication B-2.

Group of completed Ross Type BCP Lube Oil and Jacket Water Coolers ready for the shipyards.
Cutaway tube bundle shows roller expanded and flared Super-Nickel Tubes in Super-Nickel Tube Sheet and heavy brass baffles. Built by Ross Heater & Mfg. Co., Inc., Buffalo, New York. 48138

ANACONDA
from mine to consumer

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COPPER & COPPER ALLOYS

THE AMERICAN BRASS COMPANY

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THE NATIONAL ARCHIVES

FEDERAL ... R

First Distress Signals
to Meet New Coast Guard Regulations

MANDATORY JANUARY 1, 1949

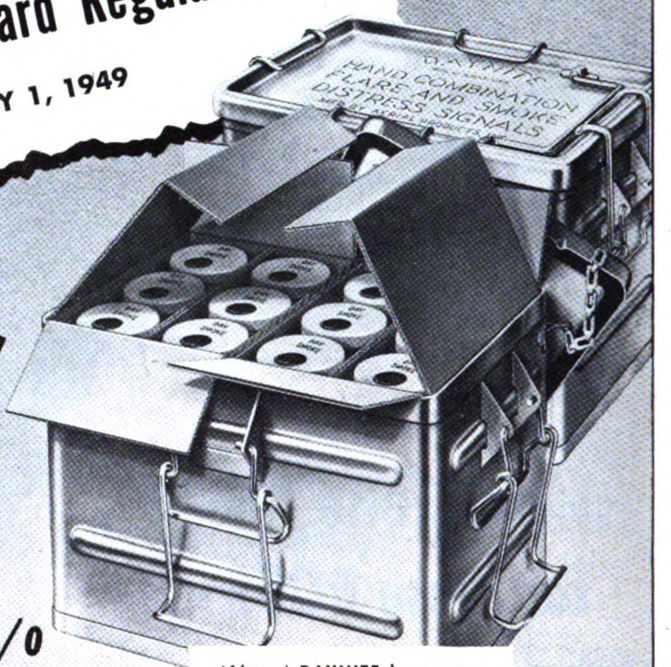
DAYNITE

REG. U. S. PAT. OFF.

SMOKE FLARE

DISTRESS SIGNALS

U.S.C.G. APPROVAL NO. 160.023/1/0



(Above) DAYNITE brass container (open and closed) showing snap-action locking hooks for water-tight seal on rubber compression gasket. Container overall only 9⅜" x 6¾" x 6½"—less than ¼ cubic foot. DAYNITE container with its combination of 12 flares and 12 smoke signals takes less than 1/5 the cubic volume of space previously needed to stow 12 paper-wrapped fireworks-type flares and 4 bulky smoke pots.

Individual Signals only 5⅛" long, weigh less than 7 oz. Yet each provides both *day* and *night* protection.

After January 1, 1949 only distress signals carrying an approval number and date of manufacture showing that they conform to the new U. S. C. G. specifications for watertightness, etc. can be carried by merchant vessels.

Most modern and dependable, Daynite Distress Signals were first to win U. S. C. G. Approval under the new specifications (Federal Register Nov. 1, 1947.)

Previously, Daynite Distress Signals were approved by Civil Aeronautical Administration, Air Transport Association, and have long been standard for the U. S. Armed Forces, 1,500,000 having been shipped to the Services.

AVAILABLE NOW THROUGH ALL SHIP CHANDLERS

AERIAL PRODUCTS, Inc.

ELKTON, MARYLAND

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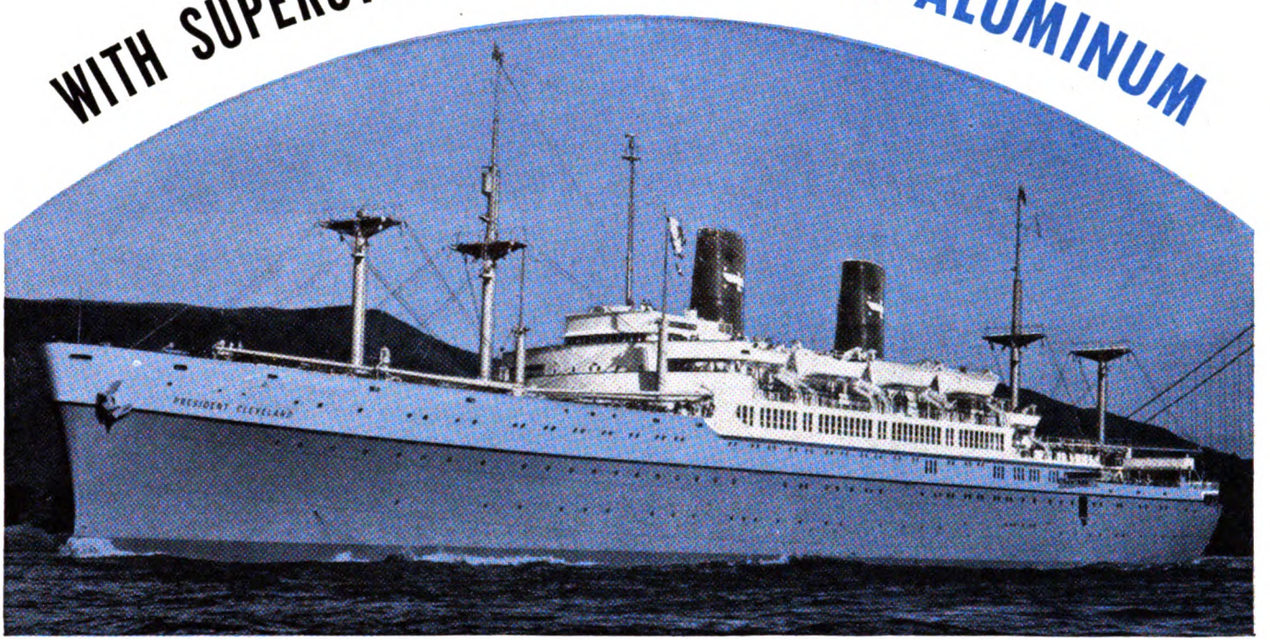
Improve Stability, Decrease Maintenance...

WITH SUPERSTRUCTURES OF ALCOA ALUMINUM

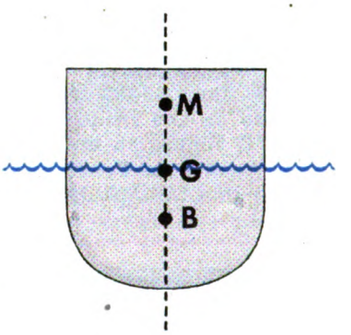


Cut topside weight . . . improve rolling characteristics. Design bridges, deckhouses, stack enclosures of strong, light Alcoa Aluminum. Use it in lifesaving and deck equipment.

Your maintenance costs will be less, too, on aluminum structures and machinery. Aluminum will not rust-streak adjoining surfaces.

Start your designs now in Alcoa Aluminum . . . get the *full* advantages of aluminum's high strength-to-weight ratio. Think of Alcoa Aluminum as a *basic* shipbuilding material.

Our marine development engineers will gladly help you with design problems. Write for a copy of the 154-page book "Alcoa Aluminum and It's Alloys", and a list of other books on the uses of aluminum. ALUMINUM COMPANY OF AMERICA, 1834 Gulf Building, Pittsburgh 19, Pennsylvania. Sales offices in 55 leading cities.



ALCOA® FIRST IN ALUMINUM

1888 1948 60 YEARS OF SERVICE

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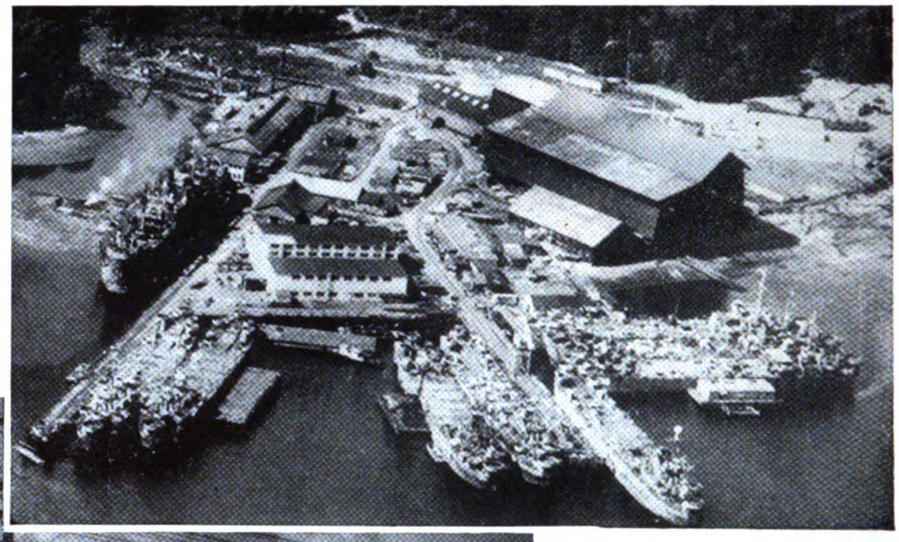
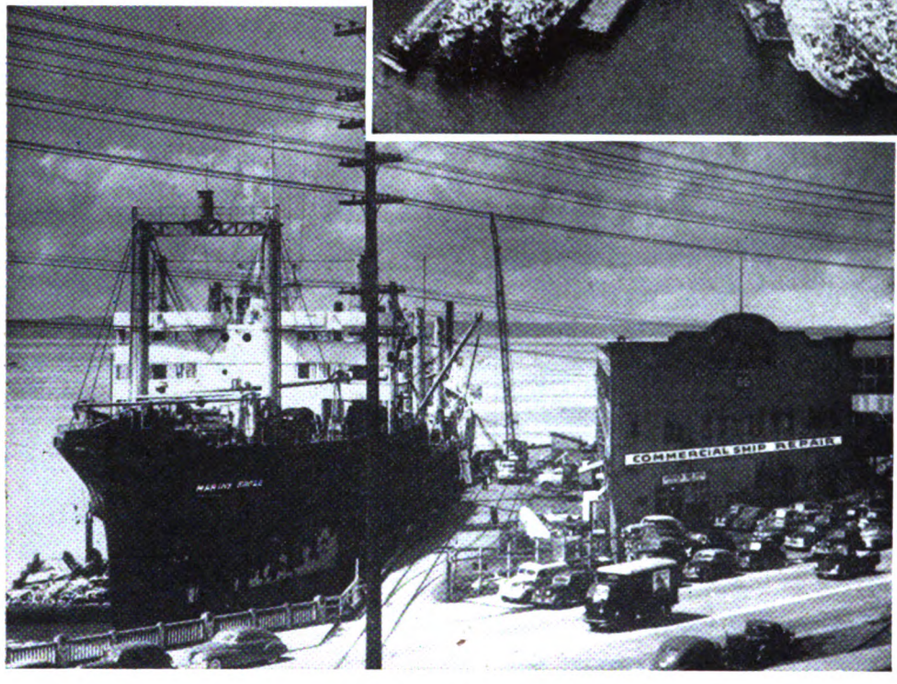
On Puget Sound TWO PLANTS at which to Serve You



Commercial Ship Repair, Winslow



Commercial Ship Repair, Pier 66, Seattle

Drydocking up to 550 Feet and 14,000 Tons

Annual inspection of the 680 foot, 22,000 ton Army Transport EDMUND B. ALEXANDER, including boiler testing, general voyage repairs and work on thirty-three 50-man lifeboats completed at COMMERCIAL SHIP REPAIR in 7 working days; coincident with voyage repairs made on the transports GENERAL LEROY ELTINGE and FREDERICK C. AINSWORTH, conversion of YO tanker to bulk wine carrier, building of new steel tug for the City of Seattle, and repair work on Coast Guard cutter BALSAM. Just some of the outstanding jobs completed on time at COMMERCIAL SHIP REPAIR.

Complete Facilities for all types of Repair, Conversion and New Construction on all Classes of Vessels

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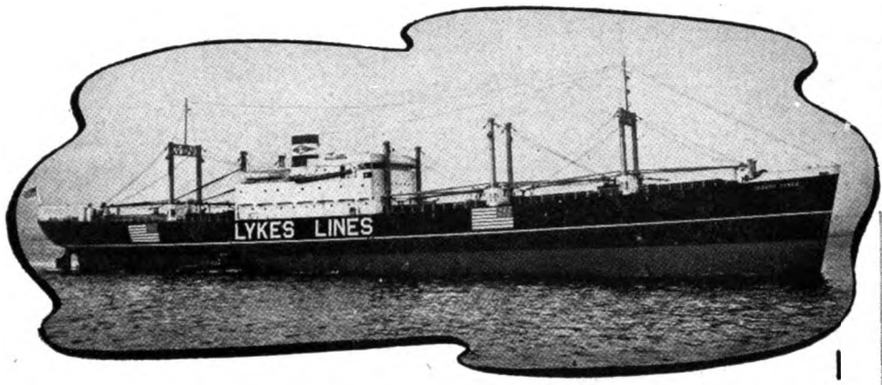


The Zoella Lykes, Federal C-1 design. She was the first of the Lykes Lines ships to be refitted with Monel doors and jambs. Monel installations are being made on Lykes Lines C-1-B and C-2 vessels as well as the C-1's.

Study these

Monel "Trouble Fenders"

on Lykes Lines Vessels

New Doors, Shelter Boxes and Covers for Magnetic Brake Drum

Lay your eye on this Monel* door and jamb. They're installed on the midship deckhouse of the S.S. Zoella Lykes.

With less than half an eye you can see what a shipshape job this Monel installation makes. It will remain in good order for the life of the ship; remain free from rust or salt-water corrosion.

Take a look, too, at the shelter boxes and covers for the magnetic brake drum on cargo winches, anchor windlasses, and capstans. Thanks to Monel, salt spray and sea water will never cause either the box or cover to rust or corrode.

Lykes Lines, largest operators of U. S. freight vessels, won its position of leadership by policies recognized as forward-looking. Adoption of tough, strong Monel "to prevent trouble where trouble comes" is typical of Lykes Lines operation. And so doors and jambs of Monel, the seagoin' metal, are in course of being installed on vessels that fly the Lykes house flag. Also Monel shelter boxes and covers; and for drip pans under the stern packing gland, Lykes are using corrosion-resistant 0.078" Monel sheet.

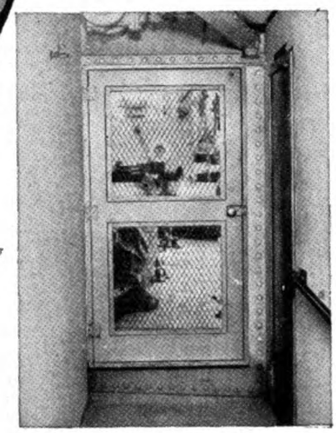
You can fend off trouble, wherever rust and corrosion threaten, by calling in a local sheet metal fabricator who works in Monel. You can find a competent one in any sizable port city. Write for a list of INCO distributors who can put you in touch with several fabricators who can build Monel "trouble fenders" for *your* ships. Address:

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall Street, New York 5, N. Y.

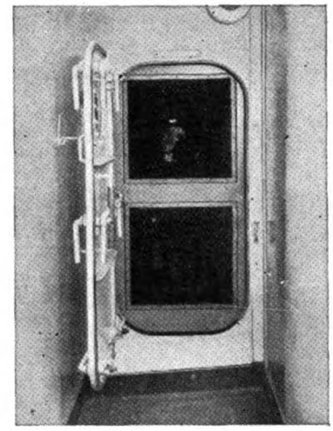
Monel* EMBLEM OF SERVICE INCO

"...It's the SEAGOIN' metal"*

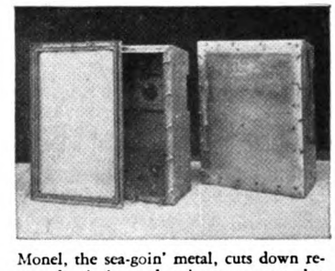
*Reg. U. S. Pat. Off.



Inside view of midship deckhouse door and jamb. Fabricated from .078 inch "35" Monel sheet, 16 mesh insect screen, and .081" Monel spring wire by CRESCENT CITY SHEET METAL WORKS, New Orleans, La.



Outside view of same door. Monel angles, rod, strip, fastenings, welding rod and "35" Monel sheet are as readily available as steel. And Monel is tough and strong, free from salt water rust and corrosion, and able to stand sea-going hard use and abuse.



Monel, the sea-goin' metal, cuts down repeated painting and maintenance cost, due to rust and corrosion. Doors and jambs are installed on Lykes Lines vessels while in port. The covers for deck machinery, such as this Monel box covering the master winch controls, are made by Crescent City Sheet Metal Works, and installed by the crew while the vessel is at sea.

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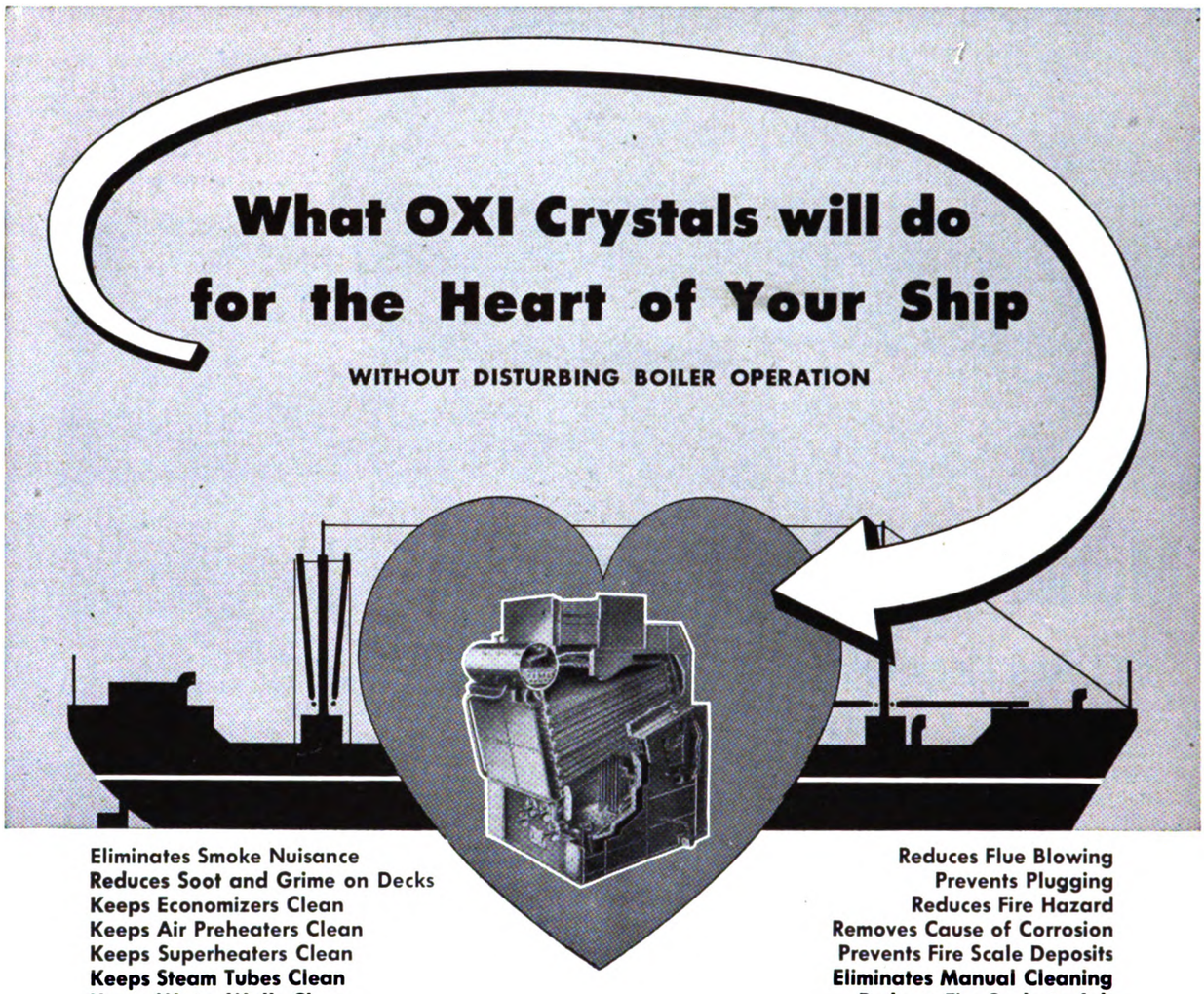
What OXI Crystals will do for the Heart of Your Ship

WITHOUT DISTURBING BOILER OPERATION



Eliminates Smoke Nuisance
Reduces Soot and Grime on Decks
Keeps Economizers Clean
Keeps Air Preheaters Clean
Keeps Superheaters Clean
Keeps Steam Tubes Clean
Keeps Water Walls Clean

Reduces Flue Blowing
Prevents Plugging
Reduces Fire Hazard
Removes Cause of Corrosion
Prevents Fire Scale Deposits
Eliminates Manual Cleaning
Reduces Fire Scale to Ash

CHEMICALLY CLEANS THE ENTIRE FIRESIDE OF BOILERS

FREE OXI SERVICE

At your request and without cost or obligation, one of our qualified trained engineers will inspect your boilers when in port, and submit to you a written report regarding the results that can be obtained with the Oxi Chemical Process. He will make the initial application and instruct your operating engineers in the most effective method to get maximum results in your boiler. He will then inspect your boilers periodically and submit reports of progress.

Consult an Oxi Field Engineer—now available at major ports—or write our General Office for further information.

FREE OXI MARINE SERVICE IS AS NEAR AS YOUR TELEPHONE

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Howard 2-5000
Newton Square 0640
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NEWPORT NEWS, VA., 4-1784
NORFOLK, VA., 2-5966
NEW ORLEANS, LA., Canal 6151

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GALVESTON, TEX., 2-8641
LONG BEACH, CALIF., LB 3-4511
LONG BEACH, CALIF., LB 7-2261
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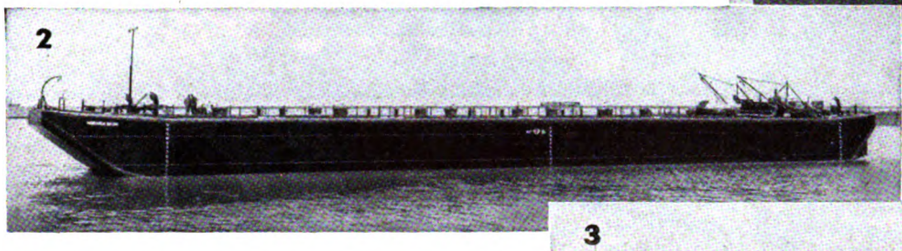
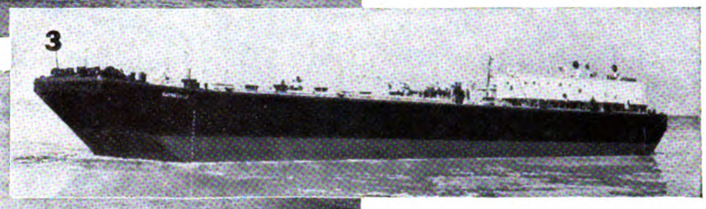
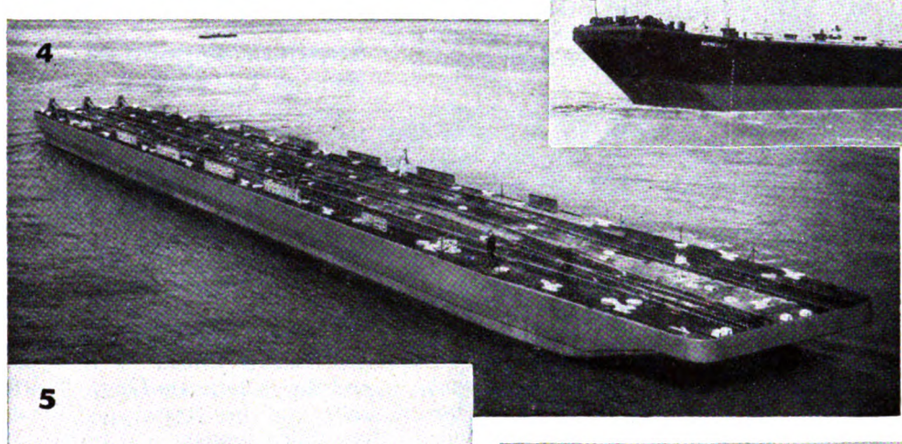
BETHLEHEM-BUILT
Harbor Craft

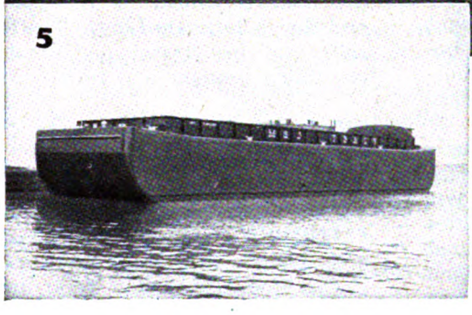


1. OIL DRILLING BARGE
   130′ x 44′ x 10′
2. OIL BARGE
   230′ x 43′ x 14′ 6″





3. WASTE DISPOSAL BARGE
   264′ x 43′ x 20′ 9″
4. CARFLOAT
   290′ x 40′ x 10′ 6″
5. HOPPER BARGE
   146′ x 38′ x 17′ 6″
6. DUMP SCOW
   223′ 6″ x 44′ x 15′



BARGES WITH A FUTURE!

Want to replace obsolete "horse and buggy" equipment with modern peak pay-loaders?

Take a tip from profit-wise operators and turn to Bethlehem for your harbor craft requirements. Designed and constructed to provide maximum service at minimum cost, Bethlehem-Built all-welded steel craft are rugged . . . dependable . . . efficient. They're barges with a dollar-savings future. Inquiries invited.

Coal, Sand and Gravel Barges • Carfloats • Dredges • Oil and Liquid Carriers
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SHIPBUILDING...SHIP CONVERSION...SHIP REPAIR...NAVAL ARCHITECTS AND MARINE ENGINEERS

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NEW YORK HARBOR
Brooklyn 27th St. Yard
Brooklyn 56th St. Yard
Hoboken Yard
Staten Island Yard
BALTIMORE HARBOR
Baltimore Yard
GULF AREA
Beaumont Yard
(Beaumont, Texas)
SAN FRANCISCO HARBOR
San Francisco Yard
Alameda Yard
SAN PEDRO HARBOR (Port of Los Angeles)
San Pedro Yard

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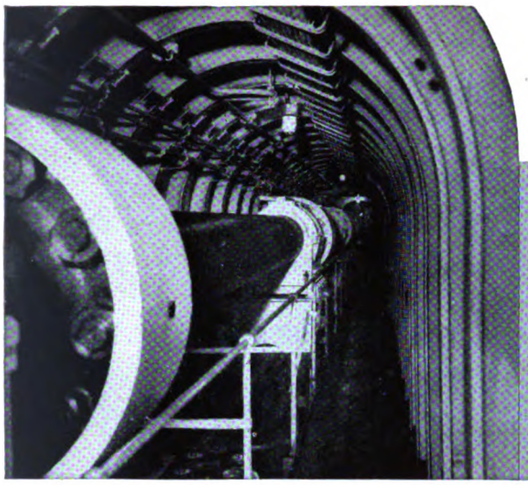

SHAFT ALLEY Chatter

Texas Coast Shipyards Open New York Office

Texas Coast Shipyard of Galveston, Texas, has recently opened a New York office at 56 Beaver Street, and appointed Scotch-trained George L. McInnes manager.

Now in its fourth year of operation this fast-growing Southwest shipyard is owned and operated by Charles N. (Alex) Turner, George L. Davis, and Paul Wagenseller, who took over the facilities of the Kane Shipbuilding Corporation in 1945.

Mr. McInnes, while representing Texas Coast Shipyard in the New York area, is also president of McInnes Corporation. His training and background are essentially British and he has had charge of construction, repair and conversion work on merchant ships for the British Admiralty.

Occupying 2500 feet of berthing space at Galveston piers B and C, the Texas Coast yard is equipped with complete machine shop facilities, pipe, plate, and carpenter shops, and employs an experienced yard force of 300 to 800 persons.

Included in the heavy lift equipment of Texas Coast's facilities is a 75-ton steam derrick barge as well as other floating equipment used in its repair and conversion operations.

TEXAS COAST SHIPYARD of Galveston, opens New York office with GEORGE L. McINNES, Manager.

Grace Line Announces Executive Changes

Grace Line, New York, have recently elected Gilbert F. Coyle vice president in charge of freight traffic, Godfrey Macdonald vice president in charge of passenger traffic, and Ernest R. Senn as assistant vice president.

Mr. Coyle has had 25 years experience in the freight traffic department of the company, during which he held successively the position of assistant freight traffic manager and freight traffic manager, which position he undertook in 1941.

Mr. Macdonald joined the Grace organization in 1922 becoming associated with the Grace Line in 1930. Since then he has been district manager of the company's Philadelphia office, freight traffic manager of the intercoastal service and assistant passenger traffic manager, prior to his appointment as passenger traffic manager in 1945.

Mr. Senn, who will succeed Mr. Coyle as assistant vice president and freight traffic manager, has been for the last two years manager of Panama Agencies Co., a Grace subsidiary in the Canal Zone and Panama. Joining Grace Line in 1932 he was made assistant freight traffic manager in 1936.

According to D. N. Lillevand, vice president in charge of Pacific Coast operations for Grace Line, Charles F. Highfield and Eben C. Hall have been appointed assistant passenger traffic managers and Paul E. Fishby as general agent, passenger department.

⚓ ⚓ ⚓

New Orleans Opens Seaman's Town House

Formal opening ceremonies for the Seamen's Town House in New Orleans were held Aug. 31 with William H. Trauth, Gulf manager of Alcoa Steamship Company, Inc., as master of ceremonies and Mayor deLesseps S. Morrison as principal speaker.

Others who appeared on the program to give brief talks were Ernest W. Jones of Jones and Roessle, architects for the Town House; J. Gordon Lee, general contractor; Ralph Pons, representing Julius Goldman of the New Orleans Community Chest; O. C. Frey, secretary of the Council of Seamen's Agencies from the Seamen's Church Institute in New York; Captain J. E. Hart, president of the board of directors for the Town House; Theodore Brent, president of Mississippi Shipping Company, and Solon B. Turman, Lykes Bros. Steamship Company executive.

⚓ ⚓ ⚓

Strachan Appointed Gulf Agents For New Dutch Line

The Strachan Shipping Company in New Orleans will act as agent at Gulf ports and in the interior for Nedlloyd Line, a new Dutch organization. General agents in the U.S. and Canada will be the Java Pacific Line, Inc. Operations will be from Gulf and Atlantic ports through the Mediterranean and Suez canals to the west coast of India, Karachi and the Persian Gulf.

Service is owned by Nederland Line and Royal Rotteram Lloyd. The first ship sails from New Orleans mid-October with monthly passenger and cargo service.

⚓ ⚓ ⚓

Waterman SS Converts C-2 For North Atlantic Run

The SS CLAIBORNE, newly reconverted from the Navy transport SS CHERUBIM, is the first of eleven vessels bought by Waterman Steamship Corp., Mobile, Alabama, from the Maritime Commission and reconverted by Waterman's repair division.

The 15-knot C-2 type dry cargo vessel was completely reconverted in 61 days and officials estimate conversion of the remaining vessels will be completed by the end of this year, at which time Waterman will have in operation a fleet of 55 wholly-owned dry cargo vessels, in addition to its chartered ships.

The new Waterman vessel loaded at Mobile directly after trial tests in the Gulf of Mexico, and left on its maiden voyage for Hamburg, Germany, beginning her operations between Waterman's North Atlantic operations between North Atlantic ports and European ports.

⚓ ⚓ ⚓

General SS Become West Coast Agents for Delta Line

General Steamship Corp. have recently become agents for the Mississippi Shipping Co., Inc., New Orleans. Cargo space, sailing and rate information pertaining to the Delta Line can now be had from any of General Steamship Corporation's Pacific Coast offices located at Los Angeles, San Francisco, Portland, Seattle and Vancouver, B.C.

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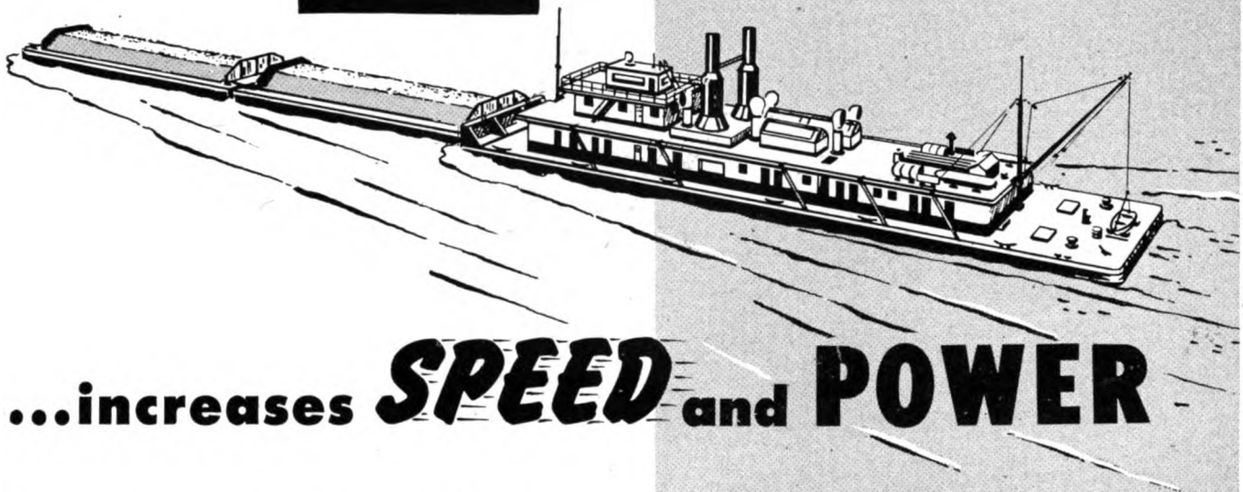
boiler modernization

PAYS . . . in many ways



...increases SPEED and POWER

In many money-saving ways, boiler modernization on river craft, lake boats and other vessels shows immediate returns. Among them—particularly effective in boosting profits—is increased speed and power.

Just one example is the reboilering of a 46-year-old tug with a new B&W unit. Increased speed and power directly resulting from this modernization enabled the tug to tackle towing jobs previously out of its class . . . bringing extra revenue to the owner. Fuel reduction of 25% is also reported. That's modernization that *really pays*.

In other cases, useful life and increased efficiency have been obtained by installation of water-cooled side and rear furnace walls in older water tube boilers. Such modernization, also, makes sense . . . and dollars, too.

Call in a B&W engineer to talk over modernization. You can rely upon his advice . . . it's backed by B&W's seventy years of marine boiler experience.

CHECK these other Possible Benefits

- Reduces maintenance expense
- Saves fuel
- Conserves space; decreases weight
- Extends operating range
- Prolongs ship's service life
- Increases dependability and availability

M-229

BOILERS FOR ALL TYPES OF SHIPS

★ ★ ★

OTHER B&W PRODUCTS — Seamless & Welded Tubes for All Pressure and Mechanical Applications . . . Refractories . . . Alloy Castings . . . Oil Burners . . . Chain-Grate Stokers . . . Stationary Boilers and Component Equipment . . . Chemical Recovery Units . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
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ON THE PACIFIC COAST: C. C. MOORE & CO., 450 MISSION STREET, SAN FRANCISCO

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SHAFT ALLEY (continued) Chatter

HUGH GALLAGHER, Vice President of Matson, at the microphone, accepting the "Brass Hat" at the San Francisco Propeller Club party. At his right is GEORGE KILLION, President of the American President Lines, who made the talk awarding the trophy to Mr. Gallagher. At the left is L. L. WHITE, Matson, chairman of the committee in charge of the party. Top honors in the horseshoe tournament were divided between Bernie De Rochie of "Pacific Marine Review" and Carl E. McDowell, lately with Pope & Talbot and now on the faculty of Stanford University.

"Hugh Gallagher Day" For San Francisco Propeller Club

It was truly "Hugh Gallagher Day" at the San Francisco Propeller Club's annual golf tournament and dinner at the Lakeside Country Club September 3rd, for the affair was not only in the nature of a farewell to Mr. Gallagher, vice president of Matson Navigation Company, who is being transferred to Washington, D. C., but the brass hat golf prize, offered for top flight steamship executives, was won by him.

Fifteen were eligible for this unusual trophy and Mr. Gallagher won it by shooting par on three holes known in advance only to the golf committee, of which George E. Swett was chairman.

Two Bethlehem shipyard men won the other top flight golf honors, Frank McGuigan capturing the low net and the perpetual trophy and Bill Brigham getting the low gross.

An all-time record number of 228 attended the party, and, of this total, 167 played golf. L. L. White, Matson Navigation, was general chairman.

⚓ ⚓ ⚓

Ingalls Develops New Type Barge Bow

According to R. I. Ingalls, chairman of The Ingalls Shipbuilding Corporation, a new, revolutionary bow for barges has been developed by the company to meet the demands for speedier, more efficient equipment.

"We have plotted curves based upon tests in the Experimental Naval Tank at the University of Michigan," Boyce Williamson, Ingalls' naval architect and marine engineer, pointed out.

Socony-Vacuum Begins Modernization Program

A program for modernizing and rehabilitating its tugboat fleet, including acquisition of a new vessel, has been announced by the Socony-Vacuum Oil Company, Inc.

Constructed by the Gulfport Shipbuilding and Repair Company at Port Arthur, Texas, the new tug is built entirely of steel at a cost of $300,000. Having an overall length of slightly more than 102 feet, a beam of 24 feet, and a molded depth of 12 feet, four inches, powered with a Diesel engine it has 1,000 horsepower at the shaft and is powered by a straight gear drive, with a towing speed of seven knots. Quarters for a crew of 11 are provided. Radio-telephone for ship-to-shore communication and a radio direction finder have been installed.

According to Frederic R. Pratt, manager of the company's marine transportation department, the net effect of the program will be an increase in the fleet's total horsepower, with no vessel having less than 900 HP.

⚓ ⚓ ⚓

ABS Transfers Personnel To Japan

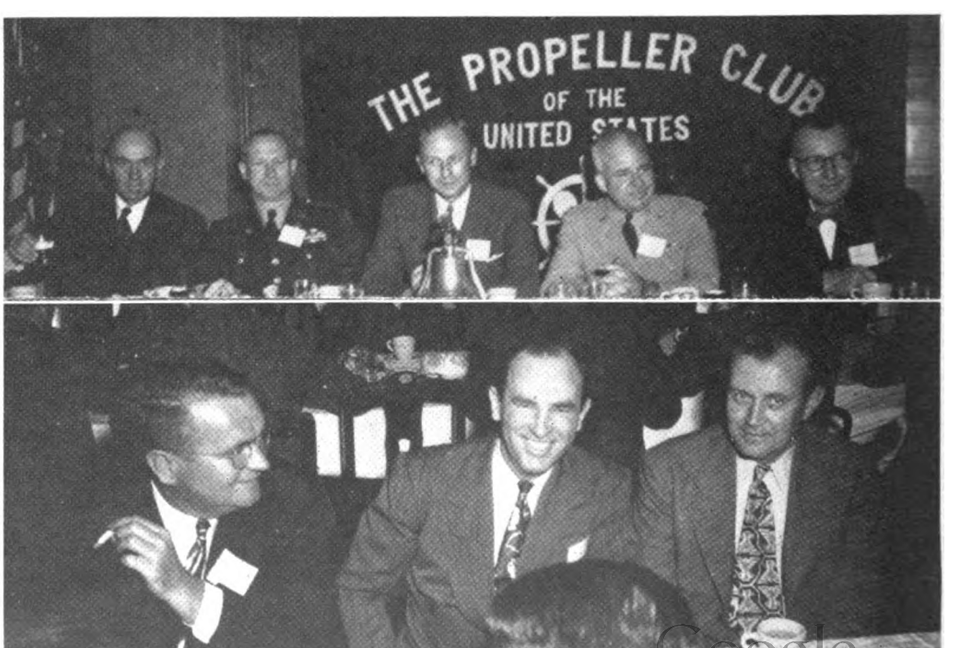
William B. Warren, San Francisco, principal surveyor for the Pacific Coast for the American Bureau of Shipping, reports several men from his organization going from the United States to Japan to work with the increased shipbuilding program there.

Robert Burns has been an exclusive ABS surveyor in Yokohama two years and now the Bureau is sending David B. Bannerman, Jr., from New York to supervise drawings and plans, and Jack Deckard from Wilmington, California, to be surveyor on new construction. It is anticipated other men will be sent by the Bureau.

The August issue of the "Bulletin" of the ABS chronicles three turbine freighters under construction for Japanese interests in the Yokohama area. These are vessels between 4,500 and 5,000 gross tons.

In addition, Mr. Warren reports two 18,000-ton tankers under construction and it is understood Norwegian ships are being built there.

SEATTLE PROPELLER CLUB MEETS . . . top, left to right: S. H. GUENTHER, Sudden and Christenson, Inc., club Vice-President; COLONEL WILLIAM H. DONALDSON, JR., Commanding Officer, Seattle Port of Embarkation, principal speaker; R. L. ALBIN, Ames Terminal, club President; MAJOR F. A. KIBBE, public information officer, S.P.O.E.; JACK SUTHERLAND, Labor relations, S.P.O.E.
Visitors from New Orleans: G. B. CLARKE, Shore Engineering Department, CAPTAIN F. T. COLEMAN, Standby Captain, C. WEST, Shore Engineering Department, Waterman Steamship Company, temporarily stationed at Seattle supervising conversion of four Waterman ships at Everett Pacific Shipbuilding and Dry Dock Company and Todd Shipyards Corporation.



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Lurline air conditioned with Carrier equipment

The completely reconditioned Matson liner *Lurline*, plying between San Francisco and Honolulu, is even more luxurious and modern today than when she was launched. Carrier air conditioning and refrigeration played a vital role in the modernization.

The *Lurline* is air conditioned from stem to stern. Individual room control enables all passengers—in first and cabin class rooms as well as the luxury lanai suites—to control the temperature to their own liking. Carrier Weathermakers give all public spaces ideal temperature and humidity the year round. Crew's and officers' quarters and mess rooms and the ship's hospital are also Carrier equipped.

Below decks, new Carrier refrigeration—replacing the Carrier system installed when the vessel was built—provides protective temperatures for both ship's stores and perishable cargo. One system maintains temperatures down to 0°, the other temperatures from 10° to 55°F.

The Matson line is only one of many leading steamship operators now bringing their older vessels up to date by installing Carrier air conditioning and refrigeration. Carrier marine engineers are thoroughly familiar with the problems involved; they are specialists in marine air conditioning and refrigeration—on older ships as well as ships still on the drafting board. And Carrier's Marine Department offers service at every important world port to make sure Carrier equipment delivers top performance.

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SHAFT ALLEY (continued) Chatter

Luckenbach's Pacific Coast Operating Personnel

Here are pictures and thumb-nail sketches of the Luckenbach Steamship Company's Pacific Coast operation executives who direct the movements of that firm's big fleet from Puget Sound to Southern California

JOE ANDERSON, assistant port engineer, San Francisco. Joe Anderson comes from a well-known San Francisco seagoing family, for his father, the late James Anderson, was chief aboard steam schooners for years; one brother, James R. Anderson, is with the United States Army Transport Service at Fort Mason, and another brother, Bob Anderson, is chief engineer aboard an Isthmian Line vessel. Joe has been in the Luckenbach dock office at San Francisco for two and one-half years and before that sailed as chief on one of the line's C-2's for a year.

JACK BOLTS, Pacific Coast Purchasing Agent, San Francisco. Bolts joined Luckenbach in February, 1937, as a port steward's clerk, was made port steward in 1941 and purchasing agent in 1945. He has long been active in Port Stewards' Association of the Pacific Coast.

TOM BROCHARD, assistant port engineer, San Francisco. Brochard has been with Luckenbach fifteen years, ashore as a port engineer since 1944 and, before that, at sea as a chief. Before joining Luckenbach, Mr. Brochard was in charge of the machine shop for the Curry Manufacturing Company, Stamford, Conn. He has sailed for the Ward, Clyde, American-Hawaiian, and Savannah lines.

JOHN CONNOLLY, vessel personnel manager. World War II yanked John Connolly from a prosaic job as receiving teller in the Hibernia Bank of San Francisco and sent him to sea, in 1942, as a purser on Luckenbach vessels. In 1945 he came ashore and recently was put in charge of vessel personnel.

IRA HEAD, assistant Pacific Coast Marine Superintendent, San Francisco. With Luckenbach for thirty years Ira Head was at sea until 1933 as chief engineer, serving on the WALTER LUCKENBACH eleven years, on the SUSAN LUCKENBACH six years, and on the J. L. LUCKENBACH. Previously he sailed on the old transports SHERMAN and THOMAS and was with Matson Grace and Sudden and Christenson. He came ashore in 1933.

RONALD HORNE, marine superintendent, Puget Sound district. He came home from World War I and went to work for Luckenbach in 1925 as a watchman. He became supercargo and held that position until he signed up with the Army Transportation Corps in World War II. Returning from the service a second time, Horne again was supercargo until he was promoted to his present position last May.

HAROLD J. MURPHY, marine superintendent, Terminal Island. Murphy joined Luckenbach in 1928 as an inventory clerk at San Francisco and has been in every operational department since that time. Before being transferred recently from San Francisco to Wilmington, he was in charge of vessel personnel.

D. R. (RONNIE) O'NEILL, Pacific Coast port steward, San Francisco. Coming ashore from Luckenbach ships in 1943 as a clerk in the port steward's department O'Neill was made port steward in 1945. Before his shoreside connection, he was in the steward's department aboard American President Line ships and was on the steam schooners.

W. G. PEROW, Pacific Coast marine superintendent, San Francisco. It is said that nobody is an "old-timer" on the Luckenbach staff until he has been with the company at least 20 years, therefore Mr. Perow rates the title of pioneer for he has served the company 34 years. He joined the line in 1914 as chief engineer on the ss LEWIS LUCKENBACH. During World I he was a lieutenant commander in the United States Navy and, in 1921, went to the Pacific Coast as marine superintendent.

EDWARD S. RAMEY, superintendent engineer, Seattle. Ed Ramey has been with Luckenbach since 1919. He went to sea as chief of the ss HARRY LUCKENBACH two years and the ANDREW LUCKENBACH six years. Ashore, he has served the company at San Francisco, Brooklyn and Baltimore, as well as Seattle. In 1938 he became superintendent engineer at Seattle, succeeding Walter Green, now vice president of the American Bureau of Shipping.

J. B. WYAND, operations assistant, San Francisco. Wyand joined Luckenbach in 1923 as a clerk on the dock. Later he was transferred to the uptown office to work in the freight department and, when the company opened its office in Stockton in 1934 he was its first manager. He joined the United States Navy during World War, spent 30 months at Pearl Harbor and came out as a lieutenant commander. He went back to Luckenbach at the end of hostilities as assistant district manager and later was named operations assistant to V. P. McMurdo, Pacific Coast manager.

⚓ ⚓ ⚓

WEST COAST OPERATING PERSONNEL FOR LUCKENBACH STEAMSHIP . . . Top row, left to right: J. B. WYAND, Operations Assistant; W. G. PEROW, Pacific Coast Marine Superintendent; E. S. RAMEY, Superintendent Engineer, Seattle; IRA HEAD, Assistant Pacific Coast Marine Superintendent; RONALD HORNE, Marine Superintendent, Puget Sound District.

Bottom row, left to right: H. J. MURPHY, Marine Superintendent, Terminal Island; JOE ANDERSON and TOM BROCHARD, Assistant Port Engineers; JOHN CONNOLLY, Vessel Personnel Manager; JACK BOLTS, Pacific Coast Purchasing Agent; D. R. O'NEILL, Pacific Coast Port Steward.

Gulf Canal Lines Purchases Facilities

A motorship freight line, The Gulf Canal Lines, Inc., have purchased the facilities of the Smith Marine Corp., on Buffalo bayou, and is installing a new Houston terminal there.

A frame office building, ship repair and ship building shops, docks and 5.54 acres of land are included in the facilities.

The Gulf Canal Lines is constructing new concrete docks and other improvements for loading and unloading freight, including a large crane.

The company has a new wrinkle in transporting freight in trailer bodies which are lifted off trucks and stowed into barges. The trailer bodies are lifted out of the barges and placed on trucks for delivery. Freight is moved from door to door without leaving the original container.

The company operates through the intracoastal canal from Mobile, Alabama, to Brownsville.

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S. S. VICTOR KELLY

Sails through Ice Field and Makes Port Safely

with MARINERS PATHFINDER* RADAR

Icebergs in the "Icy Straits", Alaska, are always a hazard . . . yet the tanker S. S. Victor Kelly sailed through a field at night and made port safely with the aid of Mariners Pathfinder radar. It was estimated that eight to ten hours were saved by the use of radar. Mariners Pathfinder radar enables this same tanker on its regular run to enter and leave Los Angeles Harbor and San Francisco Bay in pea soup fog while other vessels are anchored.

Regardless of weather conditions, ships equipped with Mariners Pathfinder radar keep on schedule. This electronic lookout sees through space . . . picks out other vessels, shore lines, buoys in fog, rain, sleet and darkness.

Safeguard your ships, crews and cargo, install Mariners Pathfinder on your vessels . . . 10 cm for oceanways, 3 cm for inland waters. Sales and service offices, staffed by radar experts, are located in principal ports.

*"Mariners Pathfinder" is the trademark of the Raytheon Manufacturing Company denoting its commercial search radar.

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NEW ORLEANS ANNUAL PROPELLER CLUB STAG

TOP LEFT; Winner of the New Orleans Propeller Club Golf Trophy, H. R. ILEY, of the H. R. Iley Company receives the trophy from CHARLES E. DUNBAR of the Algiers Iron Works, as TOM BURKE, United Fruit Company freight agent looks on.

TOP RIGHT; Low gross winner and runner-up of the New Orleans golfing event are LOUIS OSIUS, manager, Gulf Engineering Company (left) and A. P. NEEB, Neeb Kearny Co. (right).

OTHERS PICTURED INCLUDE: SAM ROSAMOND, Boland Machine & Manufacturing Co.; HARRY S. SCHAFER, Supt. Eng., Strachan Shipping Co.; JOHN A. McKEE, John A. McKee & Co.; R. A. BREDETTE, Wholesale Market; F. X. KELLY, Vice Pres., Mississippi Shipping Co. and President of the New Orleans Propeller Club; and BRAD McCOY, General Agent.

JOHN M. HANDLEY, USCG; S. G. SMITH, Surveyor, ABS; W. B. McKINSTRY, Surveyor, ABS; R. P. NOLAN, JR., A. M. Lockett & Co. Ltd.; CLIFFORD A. KING, Clifford A. King Co.; GEORGE A. HAMMETT, A. M. Lockett & Co., Ltd.; J. F. PEPPERMAN, Thompson Tool & Supply Co.; L. FRANCILLO, Boland Machine & Manufacturing Co.; A. B. PEPPERMAN, Drake-Thompson Co.

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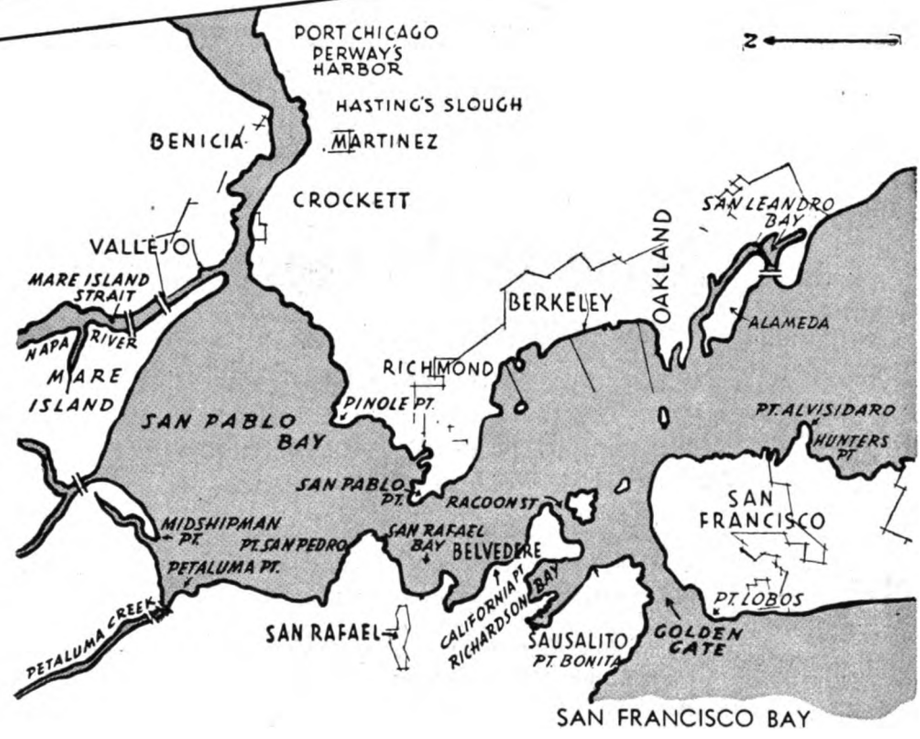

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OCTOBER, 1948 Vol. 43, No. 11

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Editorial Features

Port of Houston 31
Outlook for China 34
Washington Reporting 38
Export Line Receives 45% Subsidy for Two Ships 40
LSM Now Economical Fast Lumber Carrier 43
Operating Ideas
Forced-Circulation Boilers for Marine Use 46
Stability After Flooding 48
Shipbuilders Council Hails New Passenger Ship Program 55

Departments

Shaft Alley 20-26
Societies 44-45
Operating Ideas 46
Ports 52
Equipmentalk 56-60

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"It Was About Time"

When in August the American Export Lines announced an agreement had been reached with the U. S. Maritime Commission for the construction of two high speed, 972 passenger ships for the Mediterranean trade, the feeling generally expressed was, "It was about time."

For nearly three years the Commission has been wrestling with the problem of a postwar passenger ship construction program to restore our fleet to pre-war carrying capacity. Obstacle after obstacle has blocked the program. Some were of the Commission's own creation, others were not.

Many times the Commission has been accused of timidity, of fearing to act under the provisions of the 1936 Merchant Marine Act, and of waiting for Congress to give it still more authority. These accusations were in part justified, but there were other reasons for inaction.

With the end of the wartime shipbuilding program the Commission underwent severe contraction. Personnel changed rapidly and employees felt insecure. They acted slowly or not at all, for fear of mistakes that would cause loss of their jobs. New commissioners had to become acquainted with their work, and, we must remember that the President himself, caused much of the delay in developing a shipbuilding program by cutting off the first postwar plan on unsound grounds, and, too, by failing for many months to fill a vacancy among the commissioners. On a four-man basis the commissioners often could not reach a legal agreement on policy for the divergence of opinion was frequently very great.

Speaking frankly, we will point out another reason for the Commission's extended period of inaction on a passenger ship program. For a long time there has been a persistent feeling in the maritime field that there are some men connected with the Maritime Commission who are antagonistic to the expansion of a privately operated cargo and passenger fleet. Whether this antagonism stems from a belief that American ships should be owned and operated by the Federal government, or whether it is merely a manifestation of the bureaucrat's unwillingness to let power slip away from him (i.e., the opposition of some Commission men to giving up Government operation of coastal and intercoastal services despite heavy losses), we are not sure. But the fact is that these men delayed Commission action on a passenger ship program for many months without sound reasons for doing so.

What brought action? Among the factors operating to bring the Commission to granting a 45 percent construction subsidy to the American Export Lines in August, were these:

1. Pressure from members of the House Merchant Marine Committee who insisted that the Commission had all the authority it needed under the 1936 Act to grant construction subsidies up to 50 percent.

2. Passage by the House of the new merchant marine legislation authorizing the 50 percent subsidy even though the Senate did not act. This indicated to the Commission that it was on safe ground with Congress.

3. Re-evaluation of foreign cost data on a realistic basis. For some strange reason the Commission's employees in charge of this work seemed to feel it was their duty to evaluate foreign shipbuilding costs in such a way as to show as little differential as possible compared with American costs. Their position eventually proved untenable for data produced by the steamship companies proved them wrong.

4. The President's April letter to the chairman urging cooperation with the industry. Between the lines was the implication that the Commission had better show some action.

5. The President's finally getting around to appointing a fifth member so the Commission could function on policy matters despite opposition by any one commissioner.

6. A realization that $84,000,000 in authorized funds would revert to the Treasury if not allocated for ship construction by September 30th, and that the blame for failing to develop a passenger ship program would then lie squarely on the Commission.

7. Terrific pressure from the Navy and the Army on the basis that our troop carrying capacity was far below pre-war levels.

8. More aggressive leadership of the Commission on the part of the chairman. For several months this has been evident and it was a most important factor in breaking the deadlock on passenger ship construction subsidies. It is all to the good and presages more action in the future.

These factors do not tell the entire story but they throw considerable light on the situation surrounding the passenger ship program. Now that the Commission has actually begun a passenger ship program it is to be hoped that this part of our fleet, most necessary for national defense, will be rebuilt to the necessary size without further delaying tactics.

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"What Did General Electric Earn and Who Benefited?"

That is the title of a remarkably clear summary of the General Electric Company's operations for the first six months of 1948 published in the company's "Commentator."

In two pages of easily understood analysis the company not only shows its own objectives and results but indirectly presents a picture of how American industry has been able to give this country the highest standard of living in the world. We quote these highlights:

"General Electric wants to get its investment *down* in relation to goods pro-

(Continued on page 60)

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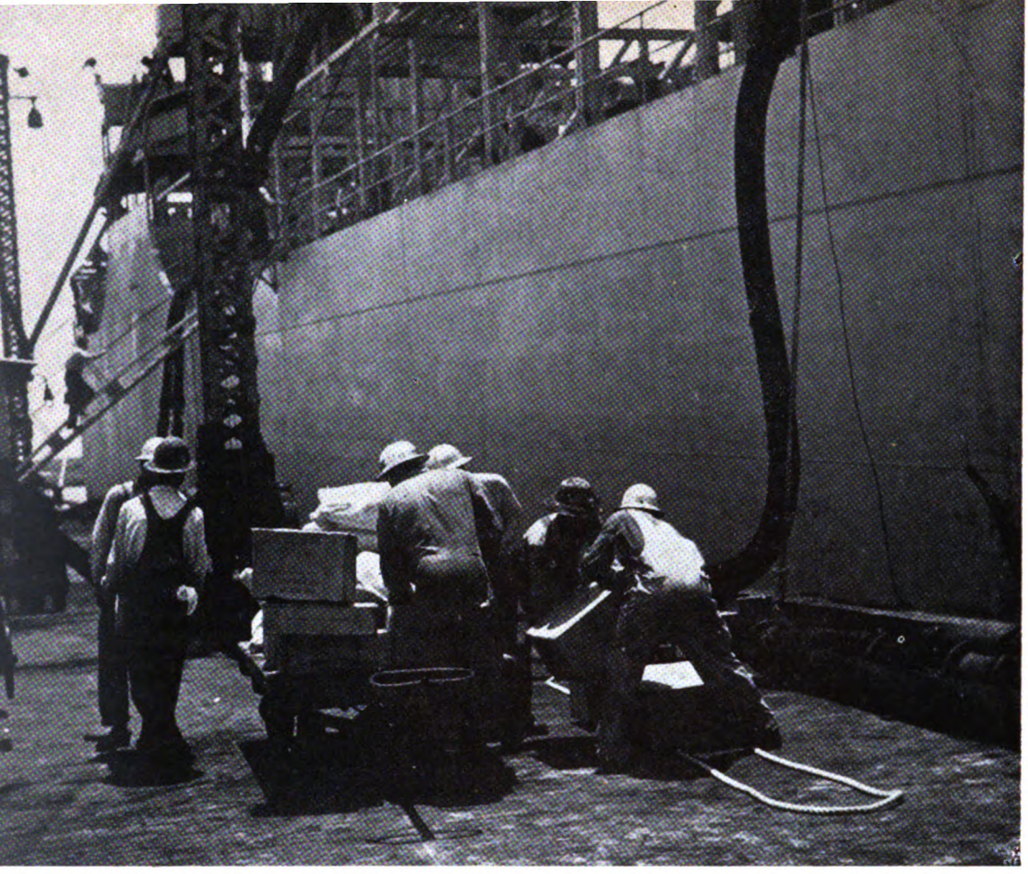
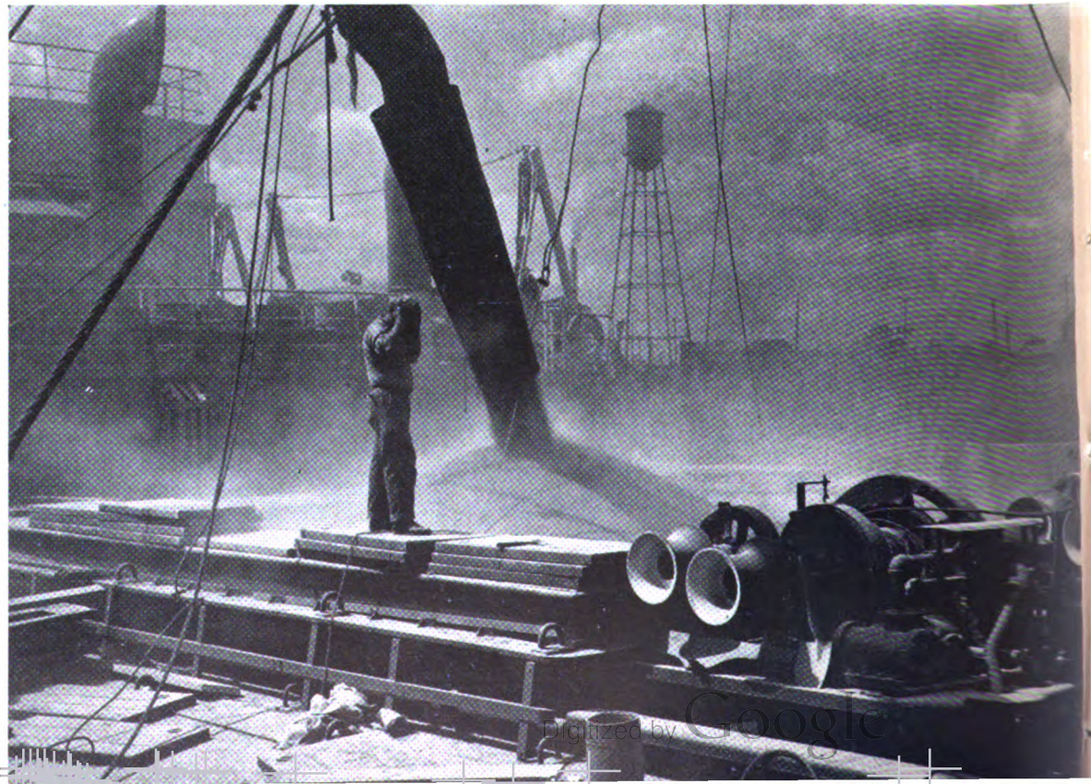


OIL

LIFE BLOOD OF PORT HOUSTON

GRAIN



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PORT OF HOUSTON

FROM A BAYOU—A BONANZA

Once called the "most damnable fake out of doors" this Texas city now threatens to grab second place in the national port race.

Once called the "most damnable fake out of doors" the Port of Houston is now busy breaking its own records. Where once stood a sleepy, cypress-hung bayou now sprawls the nation's fourth largest port. In 1837 the steamer LAURA made the earliest known trip up Buffalo Bayou looking for Houston and scored a clean miss. Now she would find more than a hundred heavy industries valued at over a billion dollars. Where Commodore Morgan strung a heavy chain across the ship channel to collect his tolls there is now being installed radar ship-control stations. The "most damnable fake out of doors" is now a throbbing man-made port fifty miles from the sea.

In 1910 the local and federal governments authorized the expenditure of $2,500,000 to improve the waterway from the Gulf of Mexico to Houston. In 1948 Congress authorized further improvements to the ship channel which will cost nearly $10,000,000. But in addition to this the port itself, already representing local and federal investment of $54,000,000, is proceeding on a $22,000,000 expansion program.

The Bonanza

Already the world's leading oil port with fifteen major pipe line systems leading into it, and served by more than sixty different tanker companies, Houston is out to corner the market on dry cargo shipments. And it's made a good start toward its goal—to be second only to New York in the nation's port list.

Take a look at the record. In the first six months of 1948 the port improved its last year's score by 23 percent, handling a record-breaking 19,996,093 tons. A leading world cotton port, Houston this year showed a gain in net receipts of 435,597 bales to make a total of 1,378,697 bales.

Delighting in smashing records, Houstonians point proudly to July's grain receipts and shipments, number of railroad cars unloaded, and number of ships loaded—a record set in every category. The last official U. S. Army Engineers' figures, which are for 1946, show that Houston missed its second-place goal by less than a million tons, and it's hoping hard that this year's 23 percent jump might land it right next to New York.

A new Team in the Saddle

This summer a new team took over the Port of Houston. Engineering-wise General William F. Heavey took the top post as general manager, and promotion-wise R. T. Behannon took over the Traffic Bureau—a combination local enthusiasts think unbeatable.

Energetic, soft-spoken General William Francis (Bill) Heavey will have the task of supervising the port's expansion plans. But big expansion plans are an old story to the General. As district engineer for the U. S. Army Engineers in New York he handled a $150,000,000 construction program for the government. Later, after retiring from the Army, he became consulting engineer to New York's Department of Marine and Aviation and helped plan the gigantic $114,000,000 improvement program of the Port of New York Authority now under consideration.

But General "Bill" Heavey could make little use of $32,000,000 worth of port improvements without some cargo—hence the other half of the team, native Texan Robert Talmage ("B") Behannon. His job will be to lock horns with other ports on the rich midwest battlegrounds and see to it that some of the spoils—a lot of them if he has his say—come down Houston way.

What is This Outdoor Fake?

What exactly is this "damnable outdoor fake?" Well, it's quite a port. It has a ship channel reaching 50 miles to the sea. It has 48 private docks, 32 for hire, 80 in all. There's a turning basin 1300 feet in diameter. Six major railroad trunk lines serve its docks and its billion-dollars-worth of industry. More than sixty-five steamship lines offer cargo service to the ports of the world. More than 80 tanker lines call at Houston. Approximately 30 lines connect it with Atlantic, Pacific, and other Gulf Coast ports. It is the Gulf Gateway for Nelson Rockefeller's Venezuelan Basic Economy Corporation program. It's an international air crossroads. And it has miles of undeveloped industrial acreage along its industrial canal.

Keep an Eye on Houston

The construction program Houston has mapped out for itself is ambitious, but already part of it is accomplished and more has been started. A first $9,000,000 improvement program will be completed in 1951 if present schedules are met.

According to Colonel Wilson G. Saville, chairman of the Port Commission, "among the major improvements will be the construction of several new deep water wharves, the installation of a new, ultra

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MANCHESTER TERMINAL is a modern rail-water terminal with berthing facilities for four ships, modern concrete warehouses and docks, a cotton warehouse and compress division, and the largest open storage yards in the Southwest. Other features are 1500 feet of single rail tracks on the wharf apron, spotting yards with a 125-car capacity, and a transit shed 1600 feet long by 160 feet wide with depressed tracks adjacent.

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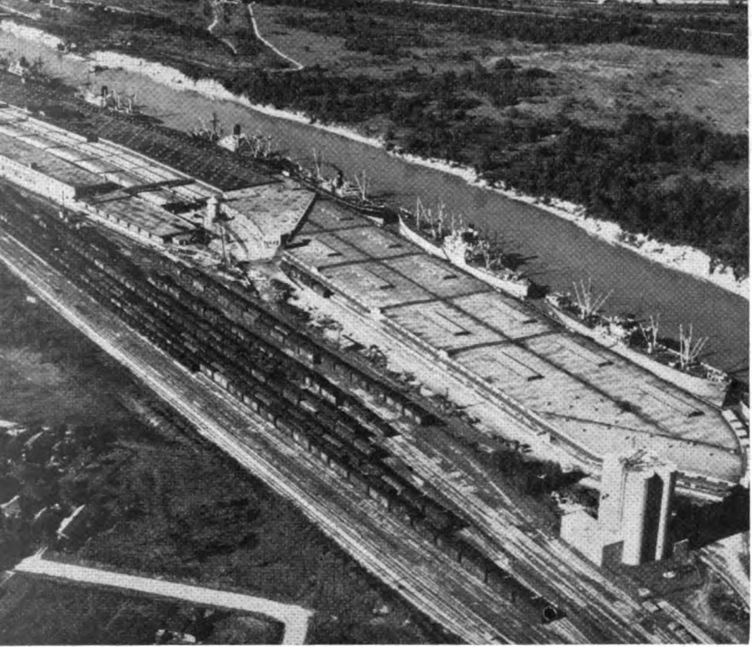
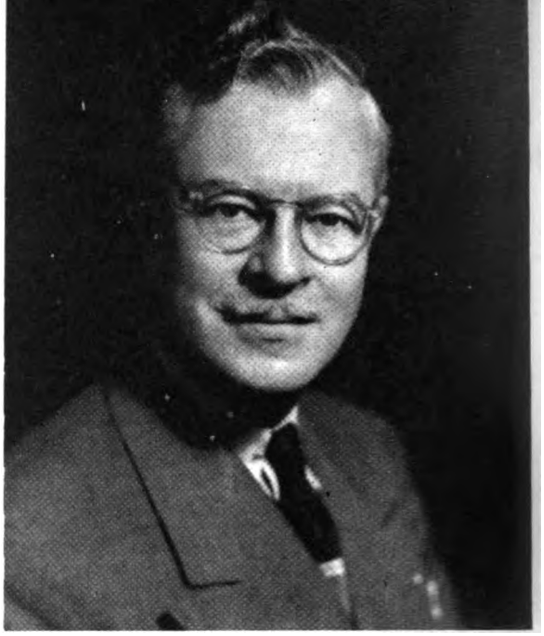
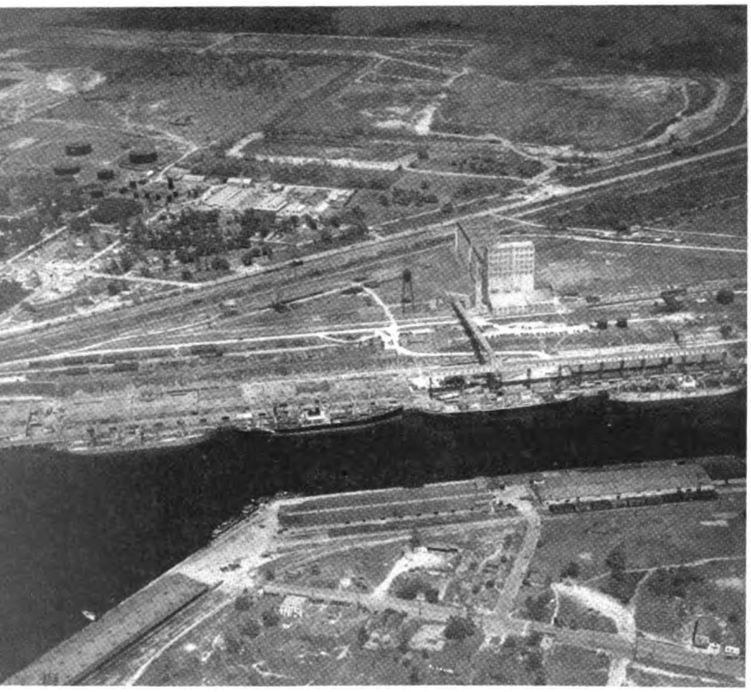


LONG BEACH TERMINAL is prominent among the nation's port facilities. Owned by the Houston Wharf Company, a division of the Gulf Atlantic Warehouse Company, it has eight ship berths, 139,000 square feet of wharf apron space, vast transit sheds containing half-a-million square feet, 872,000 feet of warehousing, and 150,000 square feet of open storage. It also has an adjoining rail concentration yard with a 600-car capacity.



GENERAL WILLIAM F. HEAVEY . . . engineering-wise.



NAVIGATION DISTRICT facilities are the largest at the Port of Houston. Owned by the Houston-Harris County Navigation District the facilities now have berthing space for 18 vessels, 7,634 feet of shipside space, 1,232,898 square feet of covered transit area, 384,250 square feet of open space, and storage space for 4,500 railroad cars adjacent to the docks. It also owns the large 3,500,000 bushel capacity public grain elevator. A $9,000,000 expansion program now underway will provide new deep-water docks and additional new handling equipment.

SHIP CHANNEL COMPRESS COMPANY is the pioneer of all Houston's port facilities. Owned and operated by Alexander Sprunt and Sons, this company was going strong when Buffalo Bayou was still a bayou. It has wharf space for two ships, warehouse space for 150,000 bales of cotton or other cargo, all types of mechanical cargo-handling equipment, and its own cotton compress, weighing and sampling facilities.

modern bulk handling plant, an improved railroad system, and the inauguration of traffic control at Morgan's Point."

How many new deep water wharves they build will depend upon construction costs. Contracts already let for the first of the new piers, wharf No. 9 at the West end of the Turning Basin, indicate a total cost of $1,734,693. This new wharf, the first to be constructed in Houston in twenty years, will be 500 feet long exclusive of approach, 250 feet in depth including the shed, and three railroad tracks will be on the apron.

Rehabilitation of Wharf No. 4 has already been completed at a cost of $575,000. More than 240 feet at the west end of the wharf was rebuilt, bringing the total length to 775 feet. In addition, a new shed, 180 feet by 110 feet was constructed to give the dock a total shed area of 62,000 square feet.

A $32,000,000 Face-Lifting Job

Two more new berths will be provided at the Manchester site to supplement the one already there. The rest will be constructed at the Turning Basin. All of the new berths will have a 35-foot water depth, large sheds, adequate road areas, and will be specifically designed for the use of portable cargo handling equipment.

Another project which has a high priority in the Houston development program is the projected bulk handling plant. It is being designed to unload any railroad car at the rate of 40 cars per hour and will handle the coal, sulphur, and other bulk commodities which flow through the port.

The publicly-owned Harris County Houston Navigation District's railroad is also in for a $450,000 face-lifting job. Already under way, this program will improve the railyards, tracks and bridges. Another railroad improvement — a new $330,000 locomotive terminal—has already been completed.

Heavy traffic on the Ship Canal has dictated the coming improvements at the half-way mark, Morgan's Point. Tagged for this item is $350,000 which will cover channel rectification, and the erection of

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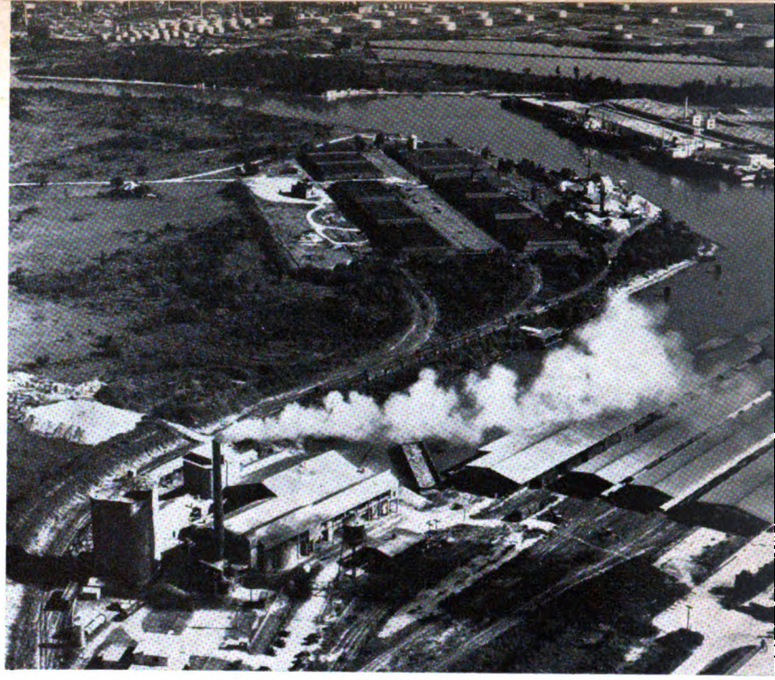
R. T. BEHANNON . . . promotion-wise.



BILLION DOLLARS worth of industry is located along Houston's Industrial Canal as shown in this picture of the U. S. Steel Co. plant, Sinclair Oil Co. refinery, and the Mayo Shell Co. As an index to Houston's growth, in the seven years from 1941 through 1947 more industrial jobs were created in Texas than in the previous hundred years. Projected industrial construction at the beginning of 1948 was $842,594,000.

a holding dock and dispatching station. The dispatching station will be radar-equipped as well as fitted with communication aids. When these facilities are complete, ships can be held at Morgan's Point awaiting a dock in Houston, and will be able to proceed up the channel with greater safety in foggy weather and at night. This will sharply cut the time it now takes for a ship to get from sea to Port Houston, and will provide a stopping point for minor repairs, stores, etc.

Other improvements scheduled to eat up the $32,000,000 include two under-the-channel tunnels, purchase of dumping grounds and right of way, widening and deepening the channel to accommodate the largest ocean-going ships, new offices for the navigation district staff, two new fireboats, and a 75-ton heavy-lift travelling crane.

Houston-on-the-Bayou

A vessel entering Port Houston uses the Galveston jetties, crosses Bolivar Roads, and enters the Houston Ship Channel. The Ship Channel ends at the Turning Basin, which is within the city limits, and is completely surrounded by wharves, docks, and terminal facilities, all owned by the Harris County Houston Ship Channel Navigation District.

The Ship Channel was constructed by dredging out Buffalo Bayou and straightening this stream to meet the requirements of large vessel navigation. Sixteen miles of the channel are in Buffalo Bayou, nine miles in the San Jacinto River, twenty-five miles in Galveston Bay, and from the end of the channel at Bolivar Roads to the sea is eight and one half miles, a total distance of fifty-eight miles from sea to the Turning Basin.

The Port of Houston is operated by the Navigation and Canal Commission, comprised of five members serving without pay who are appointed, two by the city, two by the county, and the chairman by the city and county acting jointly. These commissioners serve for two years, the terms expiring alternate years. Present commissioners are Wilson G. Saville, chairman; W. L. Walker; Sewall Meyer; L. G. Sanders; and L. E. Deats.

SHIP REPAIR FACILITIES in Houston include the sprawling yards of the Brown Shipbuilding Co., Inc. located on the Ship Channel at Greens Bayou. Its dry docks can handle up to 14,000 tons and ships up to 560 feet long. Its shops and machine tools are so extensive the company engages in several types of steel fabrication other than ships.

OIL DOCKS at Port Houston are kept busy by the more than sixty tanker lines serving the city. This aerial view shows tankers loading at the Humble Oil & Refinery Company's docks at Baytown on the Ship Channel. Six ocean-going tankers can be loaded simultaneously at these docks and a new one nearing completion. The tank farm is where the oil is stored awaiting shipment. Humble's Baytown refinery, largest in the nation, is less than a mile away.

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OUTLOOK FOR CHINA

THROUGH THE EYES OF A SHIPPING MAN

With our exports to China today only one quarter of our total exports to the Far East, what are the prospects for future trade? Mr. McCullough answers these questions in his analysis of the Chinese situation.

By JAMES A. McCULLOUGH
McCullough Associates
Washington, D.C.

The author of this article has an extensive background of experience in the political and economic affairs of the Far East. His interpretation of these broader forces in terms of their shipping implications should be of particular interest to our readers.

In his periodic analyses of the traffic problems of the West Coast ports Mr. McCullough has stressed what he feels are the two important problems which this area must face. One is the floundering position of the intercoastal industry. The other is the dubious outlook of our foreign trade to certain areas which are supplied in large, although perhaps declining, degree through the Pacific Gateway. This story on China bears a close relationship to his broader thesis.

Marco Polo was not the first Westerner to probe the wealth of Cathay, but he told the tallest stories. In the footsteps of the Venetian adventurer have come and gone prophets, engineers, economists and shipping people to predict great things for China's trade. Without attempting to break this time honored tradition, let us take a look at China through the eyes of a hardheaded shipping man who has too often read the rosy promises of a land that somehow has never come up to expectations.

At the end of the most recent global war the outlook seemed even more optimistic than ever. China's arch enemy in the Orient had been unconditionally defeated. Badly disrupted by fourteen years of hard fought war, the land appeared ready for a reconstruction drive that would require a heavy flow of American equipment to implement.

Most eager to take advantage of the postwar shipping opportunity were the Chinese themselves. At one time the Chinese had filed applications to purchase a total of 159 U. S. warbuilt vessels of more than one million tons. Final purchases of only thirty-three warbuilt vessels from the Maritime Commission were much more in keeping with reality but, as it is, the Chinese deep sea fleet has grown from 100 vessels of 300,000 deadweight tons in 1939 to 220 of 900,000 deadweight tons today.

The concept of a far flung merchant marine is about as Chinese as chop suey. In the early days of *Terry And The Pirates* the waterfront teemed with junks and sampans. The Caniff conception of China's merchant marine is no wider of the mark than postwar dreams of a global Chinese fleet.

Realistic View of China

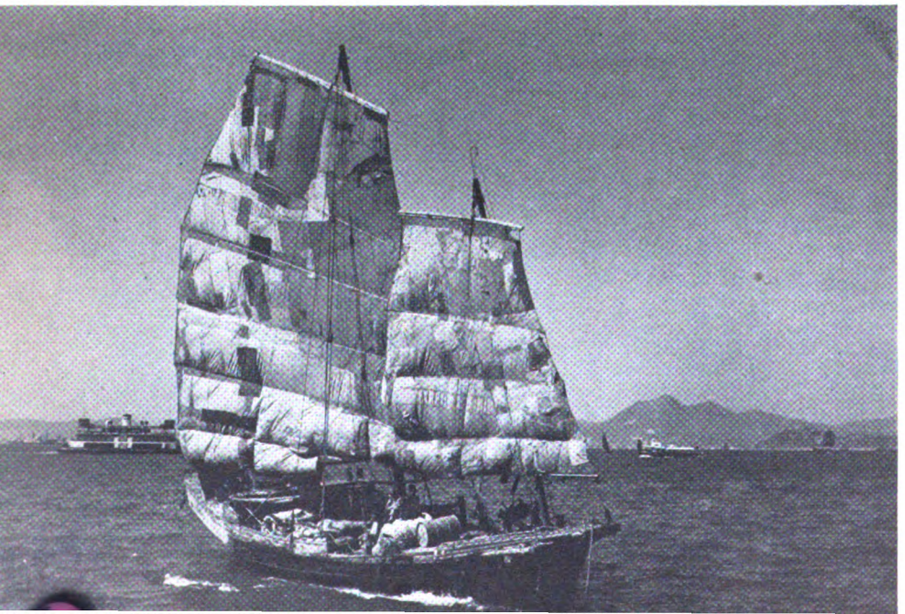
A more realistic view of China's maritime future draws ample support from geography and history. The short hauls of the Japan Sea, the Yellow Sea, and the China Seas must inevitably shape the development of any Oriental fleet. The Yangtse itself is navigable for ocean going vessels all the way up to Hankow and, like the Chinese coastal traffic, it is reserved for Chinese flag vessels. Probably of greater importance is the introspective character of the Chinese personality. The Chinese have not figured prominently as great discoverers of history. Foreigners have come to discover them or to "open the door" to trade opportunities. It is a significant fact that, when the Chinese ship owners had to man their warbuilt purchases, they were forced to draw extensively on the Occidental labor supply. To cite these facts is in no sense a reflection on the Chinese national character. It is merely to accept the lessons of geography and history.

In fairness to both sides of the controversy, the operators of the privately owned and the government fleets under the Chinese flag are not content to accept Japan and the other Pacific Islands as the outer perimeter of their operations. One prominent Chinese ship owner is actively attempting to set up a network of liner operations to the United States through a cooperative plan of all the Chinese companies. There is much talk of the possibility that the Nanking Government may sell its own fleet, the China Merchants Steam Navigation Company, to ambitious private interests. All told, there are approximately thirty Chinese dry cargo vessels of about 200,000 deadweight tons which conceivably could be included in a United States liner trade plan. A less unlikely possibility is that approximately half this number might be employed on routes to our Pacific and Atlantic ports, but even this number is problematical.

European Competitors

Of greater concern to American ship owners in the China trades are the expansion programs of the European operators. Any American plans must be drawn up with one eye on the Scandinavians in particular. The steady flow of fast motor liners from the Swedish ship yards points the way to the stiff competition of the future. As a partial measure of the problem, the American labor costs have now trebled the Scandinavian average and the differential is growing ever wider.

The American operators were quick to charter large numbers of Maritime Commission vessels in the early postwar period before foreign competition had a chance to develop. Their purchased fleet of fifty vessels of predominantly the C-2 and C-3 types is intended for longer term operations and can be kept in steady em-



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JUNKS AND SAMPANS are still a familiar sight on the Chinese waterfront, usually with sails made of a multitude of vari-colored patches.

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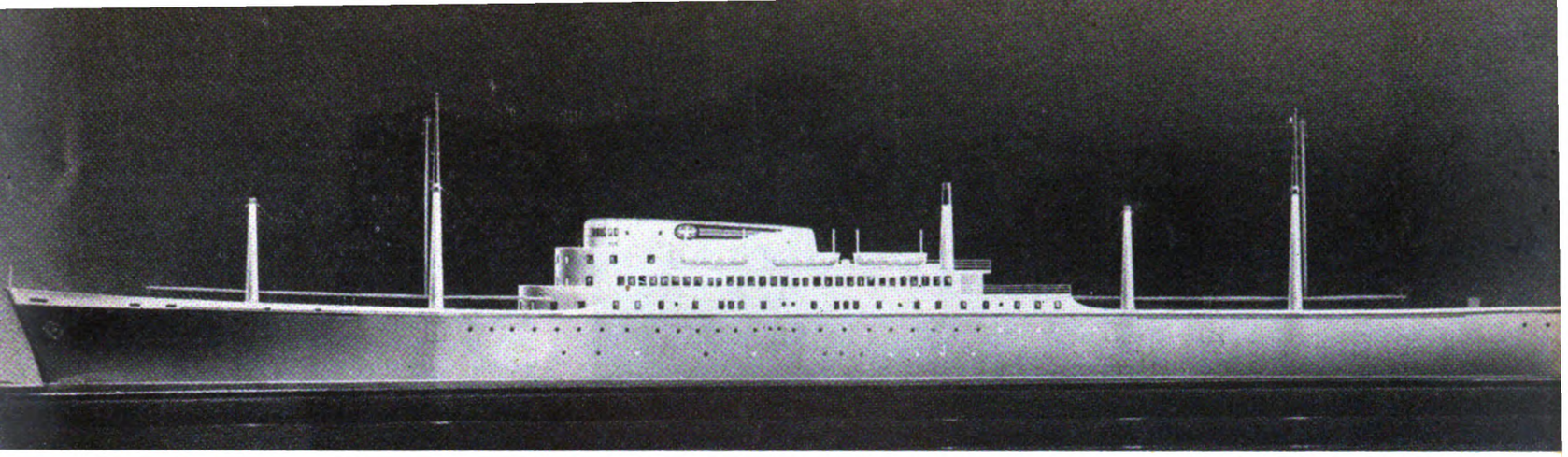


THE RECENTLY-ANNOUNCED agreement between American President Lines and the U.S. Maritime Commission for the purchase of three deluxe 19-knot passenger-cargo liners for round-the-world service will add these streamlined ships to the company's fleet. Known as the v-2000 type they will be 536 ft. long, have one-class accommodations for 228 passengers and 522,000 cu. ft. of cargo space and will be built by New York Shipbuilding Corp. at Camden, N. J. at a cost of approximately $33,000,000.

ployment if the foreigners are held at bay. Four of the American companies have operating differential subsidy contracts covering the four major sea lanes from the United States to the Orient. The other eight American flag companies on these sea lanes have preferred to operate without benefit of subsidy or have been denied subsidy applications by the Maritime Commission.

Taking the subsidized and non-subsidized operators as a group, their competitive performance, against the foreigners in superior numbers, is gratifying testimony to the vigor of our merchant marine. During the early part of the current year 63% of our exports to the Far East as a whole have been carried on American flag ships in contrast with a national average of 53% on all essential trade routes. In the passenger trade, the American President Lines operates the only scheduled passenger ships from the United States to the Orient. To its fleet of C-3 passenger ships and emergency P-2's, APL has now added the luxury liners *President Cleveland* and *President Wilson* and has recently made public its plans for round-the-world passenger ships of the future. But anyone who believes that APL has a monopoly of the trans-Pacific passenger trade should inspect the passenger accommodations offered within the international convention limitations by the freighters. The steward service, the excellent cuisine, smoking rooms, baths, lounge rooms and other luxuries available on the Scandinavian freighters have been a factor of real competitive importance since the war.

What is Wrong with China

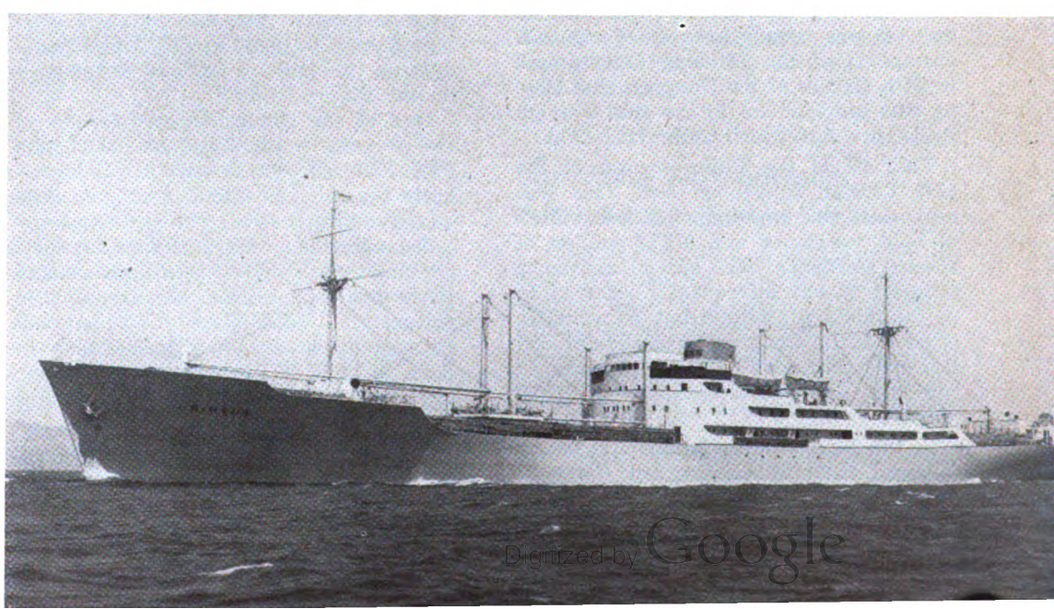
Some optimists find comfort in the fact that, at inflated values, our exports to China are higher than the pre-war level. Such a comfortable view is tenable only when the current position is seen in a limited perspective. Today our exports to China are only one quarter of our total exports to a war torn Far East. What is more, the postwar China trade boom died aborning. At the peak of the boom in 1946 we sold $512.0 million worth of goods to China. In 1947 the total was cut to $444.0 million. In 1948 it will be approximately $390.0 million. Everywhere among the traders with the Orient we hear this insistent question: What is wrong with China anyway?

Before we can even grope for an answer, we must get rid of one common misconception of China as a closely knit economic and political entity. Happily the era of the provincial warlords is gone. The wave of nationalism following Japan's invasion of Manchuria brought in its wake a temporary reconciliation of the factions. For more than two years, however, the evidence of a return to regionalism has been becoming more clear. All you have to do is read a cross section of China's newspapers — even outside the areas occupied by the Communists—to be persuaded that there is something less than a unified national sentiment. In Shanghai the American dollar is the currency medium. In Canton it is the Hong Kong dollar. In many parts of China there is a disposition to write off North China entirely. The reconstruction program for Formosa is tending to become something apart from the Chinese mainland. What all this adds up to is a tendency towards disintegration which must be brought to an end or given more practical recognition in our own programs.

In its broadest sense our tottering trade with China is due to the simple fact that China cannot finance a high import standard. Torn and divided by civil war, its surplus producing areas occupied or partially isolated by the Communists, its transportation and communications badly jumbled, its chaotic currency position seriously interfering with all forms of internal and external trade, China has few commodities to offer us. Its ability to provide shipping and other services is even less. It has very few investment possibilities that would interest the money markets of the world. Interesting in this connection is the fact that the Export Import Bank earmarked $500.0 million of its loanable funds for China in 1947, but had to abandon its plan. In consequence, our exports to China can be continued in any appreciable volume at all only through a policy of extensive grants from the United States Treasury. Over the past twelve years we have pumped $3.0 billion into China, only a small part of which is salvagable.

As an explanation of China's weak position, the lack of any export surplus is of particular interest to our shipping industry, since it also explains our inability to find return cargoes. For the depressed availability of furs, hides, car-

"THE STEADY FLOW of fast motor liners from the Swedish shipyards points the way to the stiff competition of the future" . . . Vessels such as Transatlantic Steamship Company's new ms NIMBUS, built in 1947 at Gotaverken, Gothenburg, Sweden, for Transpacific operation. Capable of 22 knots, her average cruising speed is 17 to 18 knots, passenger accommodations for 12, with crew quarters for 48, 8,870 DWT, bale capacity of 496,446 cu. ft. including refrigeration capacity of 49,088 cu. ft. General Steamship Corp. is the agent for Transatlantic.



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TO MEET THE CHALLENGE of foreign freighters American cargo vessels are reconverting their ships looking toward passenger revenues. In line with this development are American Mail Line, Pacific Far East Line, and Pacific Transport Lines.
This modern lounge is aboard the SS AMERICA TRANSPORT, the newest addition to Pacific Transport Lines, Inc., San Francisco, trans-Pacific fleet of five company-owned ships. Moore Drydock Company, Oakland, overhauled this C-3 vessel, rebuilt the passenger accommodations for 12, and did the joinery work. Normal speed of the AMERICA TRANSPORT is 18 knots, 12,487 DWT tons, and length overall is 490' 8⅜".

pet wools, bristles and other choice liner cargoes of Mongolia and the North we can thank the Communists. For the declining availability of tungsten, antimony, wood oils and other products of the Center and South we can offer as explanation the general political and economic chaos. Bad luck too is also playing a part, as underscored by the fact that the expansion of Taiwan's sugar production has coincided with the return of a world sugar surplus. American grants of aid funds are essential to preserve any semblance of regular trade with China but the real barometer of a return towards normal will be China's export volume.

Title IV of the Foreign Assistance Act of 1948

As the Marshall Plan was going through its original preparatory stages, the fiscal plight of China approached the extremes of panic. The aggregate of China's liquid dollar balances which could be inventoried was only $200.0 million, and the monthly rate of depletion was a full 10%. Even so, the Administration appeared reluctant to become heavily involved in the China problem, at least until the European recovery plan had been set in motion. It was largely because of vigorous champions of the Nanking Government in both Houses of the Congress that China was provided for in the 1948 Foreign Assistance Act which authorized ECA.

Title IV is the China section of the 1948 Foreign Assistance Act. This title authorizes the granting of $338.0 million of ECA assistance and $125.0 million of special assistance. The special assistance program is not infrequently referred to as the military program but, as a matter of record, the Congress carefully avoided any reference to a military program in setting up the special assistance of $125.0 million.

In the ECA Appropriations Act which followed the authorization act, the total sums set up for China's assistance were reduced to $400.0 million with the stipulation that the special assistance program should remain unchanged. As the residual claimant, ECA's share was therefore reduced to $275.0 million. The meaning of this reduction to shipping is apparent from the fact that several of the high revenue items, such as tobacco from Hampton Roads, were eliminated from the Chinese program immediately after the reduction in appropriations.

Tide Has Not Turned

In keeping with the China tradition, the passage of the appropriations act itself set off a wave of optimism. Even the reduced figure of $400.0 millions was regarded as enough to turn the tide, but no turn has as yet developed for reasons that are not hard to seek.

The first point to bear in mind in this connection is that the ECA program is not merely a conglomeration of commodity items to be shipped. Under the leadership of Roger D. Lapham, former mayor of San Francisco and an experienced shipping man in his own right, an ECA mission to China has been organized to carry out a comprehensive plan of Chinese assistance. Mr. Lapham may ultimately have as many as 150 United States citizens, in addition to local employees, on the expert team.

One of the non-commodity aspects of the program is the Rural Reconstruction Plan. The purpose of RRP is predominantly social. It is intended to give constructive outlets to the young Chinese intellectuals and to offer the Chinese rural population, which represents about 85% of the entire population, an alternative to communism. Highlighting this plan will be attempts to set up experimental stations in rural areas where communistic infiltration has already set in. Americans would be less than candid if they were to deny that high land rents and tenancy problems in China are a major chink in our ideological armor. Legally up to 10% of the ECA funds may be used for the purposes of RRP but practically all the money will come from the Chinese local currency account. Translating this conclusion technically into transportation terms, the necessary materials will be found within China.

ECA Reconstruction Projects

Another phase of the ECA program which will give rise to comparatively little U. S. export volume in the first year of ECA is the $70.0 million of reconstruction projects and capital equipment replacement. The development of this program is under the direction of Charles L. Stillman who has been flying back and forth between Nanking and Washington in an effort to get things rolling. Like many observers before him, Mr. Stillman has found large inventories of idle equipment in China dating back almost to the beginning of our period of $3.0 billion of assistance. To incorporate this inventory of idle and literally rusty equipment into the new reconstruction and replacement program, his greatest efforts have been in the direction of engineering surveys. Whether the appropriations deadline of April 1949 for this program can be met is a good question.

Largest items in the reconstruction and replacement programs are the Chinese railroads, power plants, coal mines and Taiwan fertilizer plants. Good news to any traveler in South or Central China is that the Canton-Hankow Railroad is scheduled for heavy outlays. In the long run the success of ECA may be judged by the development of these capital projects, but, to the shipping industry, the immediate cargo development is of doubtful importance.

ECA Commodity Programs

Even the ECA commodity programs have been only moderately stimulating to our exports to date. The commodity programs may be divided conveniently into four approximately equal subdivisions, i.e., food, petroleum, cotton and the miscellaneous catch-all. The largest single food item is rice from Southeast Asia which is carried exclusively in Chinese bottoms. Most of the petroleum is brought to China from the Persian Gulf. Fortunately for the American ship owners operating from our Gulf and, to a limited extent, from California, the cotton is entirely an item of American supply and, in view of our surplus position with regard to this fiber, the U. S. ports will continue to be the exclusive source. Finally, since some of the miscellaneous items are from offshore sources, we may safely conclude that only about $100.0 million of ECA financed exports from the U. S. ports will be shown on the customs export declarations for the calendar year 1948.

The special or no-strings program of $125.0 million has also had even less influence on our exports this year to date. First reason is the exasperating delays in activating the program. From the beginning Washington had little advice to offer except that no one but the Chinese would have anything to do with it. Un-

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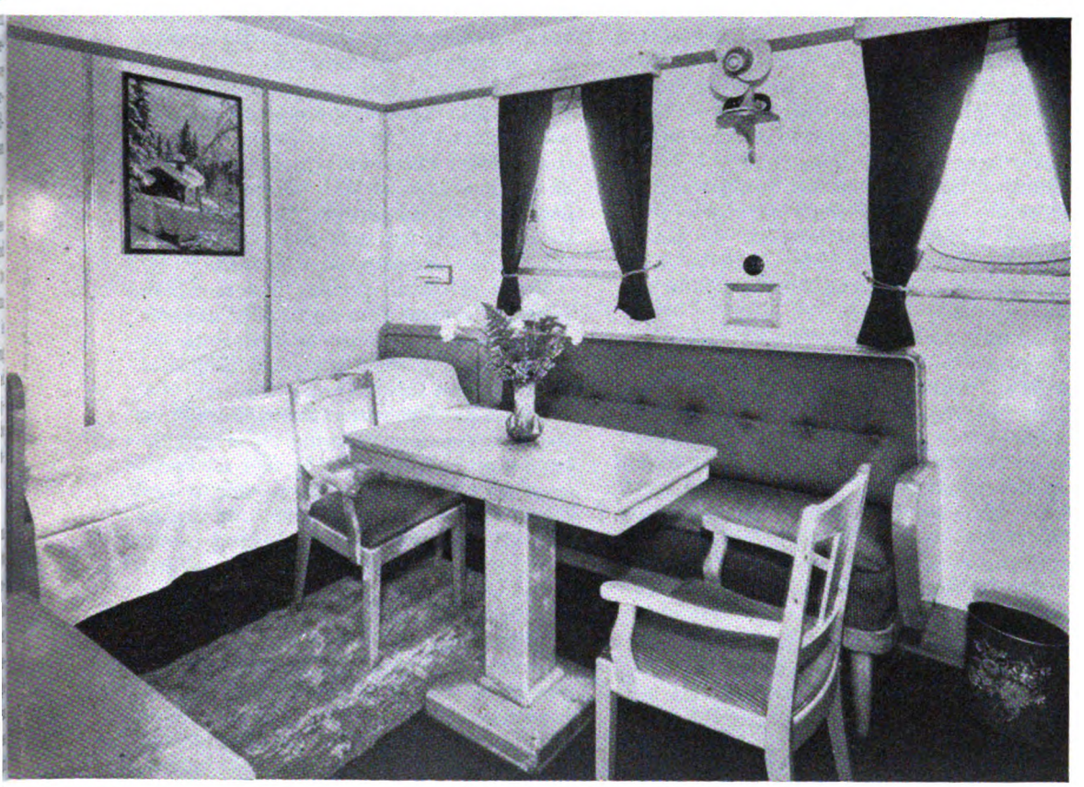
fortunately for our Oriental friends, the program must be completed by next April to meet the appropriations deadline, and, up to September 1948, only a single shipment of commodities had been arranged. Partially to hasten the completion of the program, the Chinese have officially requested the United States Army to provide most of the materials and to arrange the actual shipments. So many technical difficulties have arisen, however, that the program is even now moving at a snail's pace. Most of the technical problems follow from our army's preoccupation with its own pressing problems of the day.

Americans are only beginning to realize that we do not have huge military surpluses which can be speedily mobilized for the requirements of our allies. So far the Chinese have been successful in procuring surplus Harvard-type trainers from Canada and similar aircraft of modern design from our own commercial factories. For most of the military stores, however, they must have access to the supplies of our army or risk the delays of new production contracts beyond the April deadline.



SCANDINAVIAN MOTORSHIPS are offering trans-Pacific passengers modern comfortable quarters, such as shown here on the mx CASTLEVILLE of the Klaveness Line. Built in 1946 in Sandefjord, Norway, the CASTLEVILLE accommodates 12 passengers in double and single cabins, each with a private bath. She is Diesel powered, has a speed of 16 knots, is 464 feet long, 9,000 DWT, and 530,000 cu. ft. ble capacity. Refrigerator capacity is 9,900 cu. ft. for chilled cargo and 1,100 cu. ft. for frozen cargo. Pacific Coast agents are Sudden & Christenson Overseas Corporation.

How You Get the Business

The complexities of shipping arrangements in the Chinese aid programs as a whole must be scrutinized carefully to be believed. Universal Trading Corporation, which is the procurement and shipping agency of the Chinese Government, maintains a main office in New York City. On paper UTC carries out the procurement and shipping assignments of the other Chinese Government agencies in Nanking, Shanghai and Washington. Its methods of doing business follow the normal commercial pattern. It has, for example, the customary system of conference contract rate agreements.

In practice the commercial importance of UTC is on the decline. The trend is due in large measure to our own government's encouragement of more nearly normal commercial channels. Another factor is the growing strength of the Chinese administrative offices in Washington. The Commission on Aeronautical Affairs, the Ordnance Department and the Ministry of Communications—all in Washington—now play a major part in the fixing of Chinese cargoes even when the shipping documents are signed by the staff of UTC.

A second major channel of Chinese shipping procedures, although a rapidly narrowing one, consists of the United States Government agencies. The Bureau of Federal Supply—long an important factor in providing medicines, pesticides and other special items—has completed its program. The Department of Agriculture will remain responsible for shipping bulk foods.

With the encouragement of ECA the private arrangement of shipping to China is growing apace. Practically all the non-bulk, non-military items will in the future be purchased C.I.F. Shanghai or other Chinese port along the lines of the cotton program of this year. The traffic people of our shipping lines must therefore pound the pavements in Shanghai to such familiar offices as Anderson, Clayton and Company, George H. McFadden & Company and, particularly in the reconstruction and replacement equipment programs, to the offices of Jardines and Anderson & Meyer.

A Glance at the Future

The low ebb of our Chinese trade has a special meaning for our West Coast ports. Already suffering from the postwar slump of our intercoastal trade, the threat to our Oriental markets has given the more thoughtful Pacific Coast leaders cause for alarm. Even before the threatened decline in our Oriental trade, the West Coast was worried by the appreciable shift in traffic to the Gulf and East Coast ports. In the between wars period, for example, this shift was most pronounced primarily because of the development of foreign express liners to the Gulf and to the East Coast. Today the problem is many times greater.

To meet the challenge the West Coast leaders, sparked by hard driving Maitland S. Pennington of Pacific Transport Lines, have set up the Western Transportation Conference. With the cooperation of all groups interested in the cargo movement through Pacific ports, they hope to maintain a wide open gateway to the Far East.

On a broader national basis the basic issue is how long our Treasury must support our trade to China with outright grants of public funds. One thing at least is certain: China is in no position to finance the substantial share of its own dollar imports for the foreseeable future. If, on military and political grounds, we decide to continue our policy of Chinese pump priming, our exports to that country can be maintained or may even be increased. If our fiscal policy should become more cautious, the trend of our future exports to China is not open to doubt.

The basic issue will recur and recur as long as Congress provides its appropriated assistance on an annual basis. The issue may be particularly acute at the next session, if the funds already appropriated have not been expended in full and if there is no more recovery in China than is apparent today. The shipping industry will follow the decision with no little anxiety.

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Coastwise Line Initiates Portland to Alaska Service

Announced as the first sailing under the flag of Coastwise Line in regular bimonthly service between Portland and Alaska the ss HENRY D. LINDSEY departed from Portland on September 1 laden with 5500 tons of steel rails for the Alaska Railroad, and 2000 tons of jet fuel oil and other cargo. The cargo was booked for discharge at Whittier and Seward, Alaska.

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WASHINGTON

By The LOG's Own Correspondents

Billion Dollar Program

A confidential survey by the Washington correspondents of The LOG discloses a desire on the part of shipowners to build nearly one billion dollars worth of new ships, to be completed by 1951. This would include the current contracts for American Export and American President Lines.

The breakdown would look something like this:

Eighteen fast passenger liners; at least 20 twenty-knot tankers; 25 ore carriers for the Great Lakes, possibly 6-10 passenger and package freight ships; two prototype fast cargo liners with special national defense features and two, possibly more with legislation, special type passenger-trailer coastwise liners.

Down But Not Out

The Shipping Division of the Department of State passed into the limbo of the 80th Session of Congress, but part of its work is still being carried on. The Seaman Affairs Section, largely responsible for repatriation activities and headed by Miss Frances Dailor, continues to carry on as a part of State's Division of Protective Services. It was the only part of the Shipping Division which received kudos instead of kicks from Congress.

Jesse Saugstad, former Chief of the Shipping Division, is now shipping adviser to the Office of Transport and Communications which is headed by Director Walter Radius.

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Outlook for Shipping

The bloom is off the rose in American shipping, and shipping lines again, as in the 30's, are fighting a tough competitive battle to keep their privately-owned and operated ships in the black. This is reflected among conservative opinion of practically all in Washington associated with the shipping industry.

While the dollar volume of trade shows less fluctuation, the weight volume has been decreasing steadily and the inevitable decline of such volume presents grave problems affecting the future stability and success of private American shipping.

To understand the situation it is necessary to look at a few facts:

In 1947 U. S. foreign trade was 80% greater by volume than in 1936-38, due mostly to the movement of relief and rehabilitation materials,—primarily coal and grains.

For example, U. S. overseas exports of coal in '38 amounted to 1,000,000 tons, or about 4% of all U. S. foreign dry cargo exports. By 1947 coal exports totaled 38,000,000 tons, or nearly one-half of all U. S. dry cargo export volume. Such volume will continue to decrease however, even by the most optimistic estimates.

The heavy movement of relief and rehabilitation materials abroad cannot last too long. Sharp reductions in these exports will have to be made up elsewhere if the merchant fleet is to continue to enjoy even its current level of employment.

That the heavy movement of cargoes is not only decreasing, but that the effects of foreign competition are becoming more sharply pronounced are apparent in two facts: the steady return of chartered Government owned ships, and the continual cutting of rates by foreign competition. In July 40 ships were returned to the Maritime Commission, 64 went back in June, 109 in May, and 95 last April, a total of about 3,000,000 tons in four months.

Another problem is becoming apparent, according to Washington officials. The areas of distribution of the nation's foreign trade have changed. Of U. S. dry cargo exports Europe received about 57% before the war and 72% in 1947 while exports to almost all other areas except South America have fallen considerably. The 72% in 1947 is bound to come down since the rehabilitation of Europe's economy may bring a serious decline in demand for U. S. products.

The reduced demand has some serious connotations. Although part of the reduced export trade with Europe can be made up by increased imports, the potential is limited. Imports from Europe in 1938 represented about 27% of the nation's total dry cargo imports, and at present only 18%.

Several American lines are beginning to wonder if they did not purchase entirely too many cargo ships, even at bargain prices. One line is finding that chartered ships are taking a great deal of cargo which normally might move in their liner services.

That's the dark side of the picture. There are also bright spots, too.

ECA's program hasn't really started to roll. When it does American ships will get more cargoes. Also, if Europe does become economically rehabilitated as quickly as some are now predicting the decrease in coal and grain will be partially offset by movement of heavy capital goods.

Another bright fact of the picture is the movement of critical or strategic materials. The Government in an almost secret-like manner has embarked on a $600,000,000 program to stockpile materials which the nation will need in event of another emergency. The National Federation of American Shipping here will not discuss the matter, but it has been learned that one of their biggest tasks is to convince various Government departments and agencies concerned with the program that all such cargoes should move on U. S. vessels.

The industry, through NFAS, it has been learned, has had talks and conferences with officials in ECA, War and Navy Departments, Maritime Commission, Bureau of Federal Supply, Bureau of Mines, Interior, Agriculture and others, seeking to guarantee that American ships will carry all or nearly all of any strategic materials purchased abroad by the Government.

In addition, ECA has a provision which contemplates the purchase of certain strategic materials in the nations participating in their program. There has been fairly definite assurance that U. S. ships will participate in this trade.

The brightest and most optimistic spot of all is in tanker operations. Foreign trade carried in tanker vessels increased from 30.9 million tons in '38 to nearly 38 million tons in '47. While this total has declined somewhat, the outlook is that total imports and exports this year will be far above prewar levels.

There are even further factors which, while they cannot be accurately assessed at the moment, presage hope for the industry,—and without hope anything dies. Among these factors are:

Contracts for more than 80 millions in new passenger carrying ships and the strong probability of a change in Panama Canal tolls policy to provide a real shot in the arm for the intercoastal trades; the probability of long range shipping legislation in January which would guarantee at least a strong but minimum size industry, and possibly better labor relations.

Many Washington observers feel shipping is truly at a crossroads. If the various segments of the industry can present a united front, end their constant bickering among themselves and with others, come forward with their own solutions to industry problems, together it has a better than even chance of being, not tremendous in size, but at least healthy, profitable and large enough to serve the nation's economic and security needs.

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Shipbuilding Prospects

The prospects for a sizeable boom in shipbuilding is much further along the road than is generally apparent in the maritime industry. While the recent contracts for five new passenger carrying ships will provide valuable workloads, the biggest program is the less glamorous one, that of building tankers.

Today nearly 90 new tankers are either building, on order or under contracts, or being discussed or negotiated. It is reliably estimated that at least 60 of the 90 will be constructed.

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WASHINGTON Report

Japanese Shipping Revival?

Sometime in the next six months the U. S. Government will have to determine upon a policy with respect to Japanese merchant shipping. A number of official reports have been made about the Japanese postwar economy. All either indicate or actually favor the reestablishment of the Japanese Merchant Marine to nearly its prewar size and composition.

The economic theory that is beginning to permeate much thinking here in Washington is that Japan must have a sizeable fleet to help balance her economy since, before the war, a large part of the favorable balance in her foreign trade came from shipping receipts. Moreover, some in Government are beginning to worry about the effect upon the American taxpayer of the nearly $400,000,000 a year the Government is spending to help put Japan back on her feet. They feel that ways must be found to make Japan more nearly self-sufficient.

The theory that is thus gaining ground, and which the Japanese themselves, support, is to reestablish a merchant marine that will carry at least 65% of their trade.

National Federation of American Shipping here has nearly completed one of the most comprehensive studies ever made on Japanese maritime affairs. The study shows some remarkable facts, such as large shipbuilding and operational subsidies. But of even more importance, the study by its very importance is shaping up a question that the industry cannot answer; a question which will have to be taken to the American public. It is:

"Shall the American government guarantee Japan, a defeated enemy which cost the U. S. thousands of lives and billions of dollars, a merchant marine capable of carrying at least 65% of her trade, unless and until it guarantees that its own merchant marine will carry at least 50% in contrast to its prewar 22%?"

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ABS—Lloyd's Reciprocity

American Bureau of Shipping and Lloyd's Register of Shipping have concluded an agreement for reciprocity of service. Lloyd's service will be utilized by ABS in ports where the latter does not have representation, and ABS will represent Lloyd's in the U. S., Philippines and other areas.

Lloyd's Register now classes 6,853 vessels of 24,787,371 gross tons. ABS, with the largest registration in its history, now has classified and expects to classify 9,298 vessels of 40,231,704 gross tons.

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American Shipping Asks Trucking Industry Help

The trucking industry has been asked by shipping to aid in helping the coastwise interests in their request to the Government for a 50% construction differential.

Some shipping officials here believe that if such a differential were made available, there would be an immediate start on at least 25-15,000-18,000 gross ton ships with 20-25 knot speeds to operate between all Pacific Coast posts, Gulf Ports to New York and along the Atlantic Coast. The ships would be especially built to carry trucks and trailers, similar to the two planned for the Pacific Coast by Pacific Coast S. S. Co., headed by H. F. Alexander.

It is learned that the appeal to the trucking industry has been made on the basis that such vessels would save truck owners from 20-25% in over-the-road operation costs.

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Maritime Commission Reorganization

The Maritime Commission reorganization is causing deep, and in some cases, bitter dissension. A number of older officials didn't get the bigger, more important department head positions they thought they would.

While any reorganization usually brings beefs and gripes with it, the Commission's reorganization has more serious consequence. Those in Washington whose judgment and opinions are considered reliable offer the following reasons for the serious dissension:

After Admiral Land and other commissioners left, staff employees began making direct contacts with the commissioners, or even the chairman. In some cases staff employees have actually lobbied certain projects through the Commission. Therefore, a number of employees have felt "on the inside" as far as future promotions or advancements were concerned, and were bitterly disappointed when the reorganization failed to include them.

There is also the question of whether the new office of general manager will be able to overcome this dissension. If it cannot, then perhaps another reorganization is in the making.

The Hoover Commission, now studying the reorganization of the Federal Government, is supposed to make its report soon after the new Congress and President come to Washington. It is known that members of the staff of the Hoover Commission are watching how well the Maritime Commission's reorganization is working. If it doesn't work, there's bound to be another reorganization.

There is no question that some staff employees were promoted at the expense of other older, more experienced, and under seniority more entitled to the plums, employees. In this respect some feel the commissioners themselves are at fault.

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Heard in Washington

That steamship companies are urging their ship officers to become members of the naval reserve. . . . That the Egyptian Government has refused to renew the visas of foreign pilots at Suez Canal which leaves only Egyptian naval officers eligible to pilot ships and causing delays and confusion. . . . That Department of Justice is receiving documented evidence of the impact of the Supreme Court's decision in the overtime matter which it may use to ask for a stay of the decision in October. . . . That there will be nearly 40 pieces of legislation to come up in the 81st Session of Congress which the industry will either support, oppose or ask amendments.

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Shipping To Be Affected By International Organizations

American shipping is being surrounded by many international organizations, primarily of a government nature, in which the industry participation is either extremely limited or excluded. Since the decisions of these organizations will affect shipping, the industry is now exploring with government officials ways and means of participation.

For example, there is the Inter-Governmental Maritime Consultative Organization, the Safety - of - Life - At - Sea Convention, International Labor Organization, International Telecommunications Union, International Trade Organization, International Civil Aviation Organization, International Meteorological Organization. While some may sound as though they do not deal with shipping, many of their functions tend to overlap marine interests, particularly in aids to navigation.

Most, if not all, have permanent headquarters and a secretariat. American shipping is represented, if at all, only by government representatives. In some cases there is little if any liaison between shipping and the government representatives, not because shipping does not want such liaison but because some government representatives do not consider it necessary, or desirable.

The industry is now conducting a full-scale study of where and how it can participate. It's determined that it will not be left out in the cold.

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Captain McGuigan Gets New U.S.M.C. Appointment

Captain Joseph Lloyd McGuigan, USN, was made acting chief of the United States Maritime Commission recently. He succeeds James L. Bates and has been on detail to the Commission since December 1945 as chief of the Division of Small Vessel Sales.

In addition to regular service awards, Captain McGuigan holds the Legion of Merit and the Bronze Star and is an Honorary Commander of the Military Division of the Order of the British Empire, all given for service in World War II.

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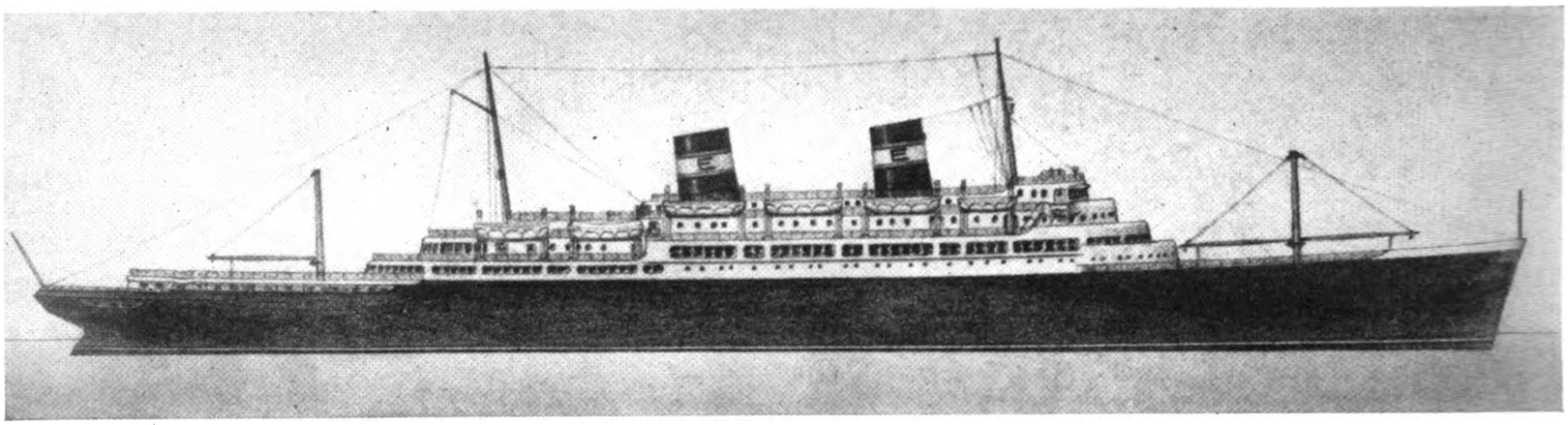

ARTIST'S SKETCH for the new American Export Line's 20,000 gross ton, fast passenger vessels for the U.S.-Mediterranean trade.

Commission Grants 45% Subsidy For Two Export Lines Ships

On the basis of a 45 percent construction subsidy plus unrevealed allowances for national defense features, the U. S. Maritime Commission finally came to agreement with the American Export Lines on August 9th for the joint construction of two high speed passenger vessels of 20,000 gross tons each for the U.S.-Mediterranean trade.

It was expected that this firm committment, the first for passenger vessels since the war, would set a precedent for other lines desiring to construct passenger ships and currently negotiating with the Maritime Commission.

The long deadlock over what construction subsidy is required under the Merchant Marine Act of 1936 to reduce the cost of the vessels to American Export Lines to a level obtainable had they been ordered from foreign yards, was broken less than eight weeks before about $84,000,000 of the Commission's funds would have reverted to the Treasury if not actually allocated by September 30th.

While the cost of the vessels was announced by John E. Slater, executive vice president of American Export, as $23,415,000 each, he stated the contract with Bethlehem Steel Company's Shipbuilding Division, contains an escalator clause to allow for rising costs during the period of construction. Cost of the national defense features was not revealed.

Daniel D. Strohmeier, vice president of Bethlehem's Shipbuilding Division, said that the keels will be laid in April and May, 1949, at the company's Fore River Yard at Quincy, Massachusetts. Completion of the first ship will be in October, 1950, with the second ship being delivered approximately six months later.

As yet unnamed, the new vessels are the first passenger ships to be ordered by a private operator in nearly ten years. With a speed in excess of 25 knots the ships will operate between New York, Genoa and Naples on a 23-day turnaround schedule calling for 15 round trips yearly. They will add about 60,000 yearly berth capacity to transatlantic travel facilities.

Employing the latest in hull and machinery design and embodying all possible safety devices, the ships will accommodate 972 passengers in three classes, with 348 in the cabin class, 316 in tourist class and 308 in third class. Some of the cabin class single person staterooms can be quickly altered to two-person tourist class rooms should the variations in travel demand so warrant.

The new ships will be operated under the operation-differential subsidy provisions of the Merchant Marine Act of 1936 equalizing American and foreign operating costs.

Mr. Slater stated that the company's agreement with the Commission covering the new ships is part of an 18-year agreement beginning last January covering all operations. Although the present fleet is comprised of modern vessels, the long term contract provides for replacements as ships reach the 20-year age limit.

Ten years ago to the day of this announcement, August 11, 1938, American Export Lines became the first company to sign construction contracts with the Maritime Commission and Bethlehem Steel for ships of its own design, following the passage of the Merchant Marine Act as amended.

American Export's Fleet

The ships contracted for ten years ago were four 9,900 deadweight ton, 16½ knot express freighters of the special "Exporter" types. Subsequent similar contracts resulted in construction of a fleet of 18 special design cargo vessels having similar advanced characteristics and totaling about 346,474 displacement tons. Included were fourteen "Exporters" and four 7,850 deadweight ton, 16½ knot "Modified Exporters." These vessels, together with two new Victory ships and the new "4 Ace" passenger vessels which started maiden voyages to the Mediterranean late in September, are owned outright by the company. Addition of the new 25-knot vessels will increase the American Export Lines' fleet to 26 vessels totaling more than 400,000 displacement tons, one of the finest and fastest fleets under the American or any flag.

The technical staff of the Bethlehem Steel Company's Shipbuilding Division designed the new vessels with the company's staff cooperating. Henry Dreyfuss, developed the interior designs.

At the press conference announcing the new ships Mr. Slater said, "Our faith is strong in the future of the American Merchant Marine and in the efficacy of the Merchant Marine Act of 1936. We are certain that American flag shipping has a great future in our trade route and elsewhere. We are so firm in this conviction that we are willing to throw into this plan all of our resources and every ounce of energy."

Additional data on the fast, new passenger ships includes length overall, 683 ft.; breadth molded, 89 ft.; draft molded to designed waterline, 30 ft.; displacement tons approximately 30,000. Troop capacity estimated at 5,000. Officers and crew required, 550. Cargo capacity 1,200 tons including refrigerated space and autos. Holds total seven, four forward and three aft. Eight decks.

Horsepower of the geared steam turbines will be 55,000 delivered through twin screws. The entire ship including crews quarters will be air conditioned.

Construction of the two new ships will provide 5,000 men in shipbuilding and other trades with 28 months of employment (24,500,000 hours) and require materials produced in all forty-eight states. In operation the ships will assure at least twenty years employment to 1,100 American merchant marine officers and seamen, plus employment for a large shore staff here and abroad.

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Levingston To Build Five New Tugs for Moran

The Moran Towing and Transportation Co., Inc., has contracted for immediate construction of five 105-foot, steel-hulled, Diesel-electric harbor tugs.

Tams, Inc., New York naval architects, working with Moran pilots and engineers, developed and perfected a design for the vessels, which will be constructed by the Levingston Shipbuilding Co. at Orange, Texas.

"These tugs have been especially designed for docking, undocking and transporting ships in New York harbor," Rear Admiral Edmond J. Moran, president, said.

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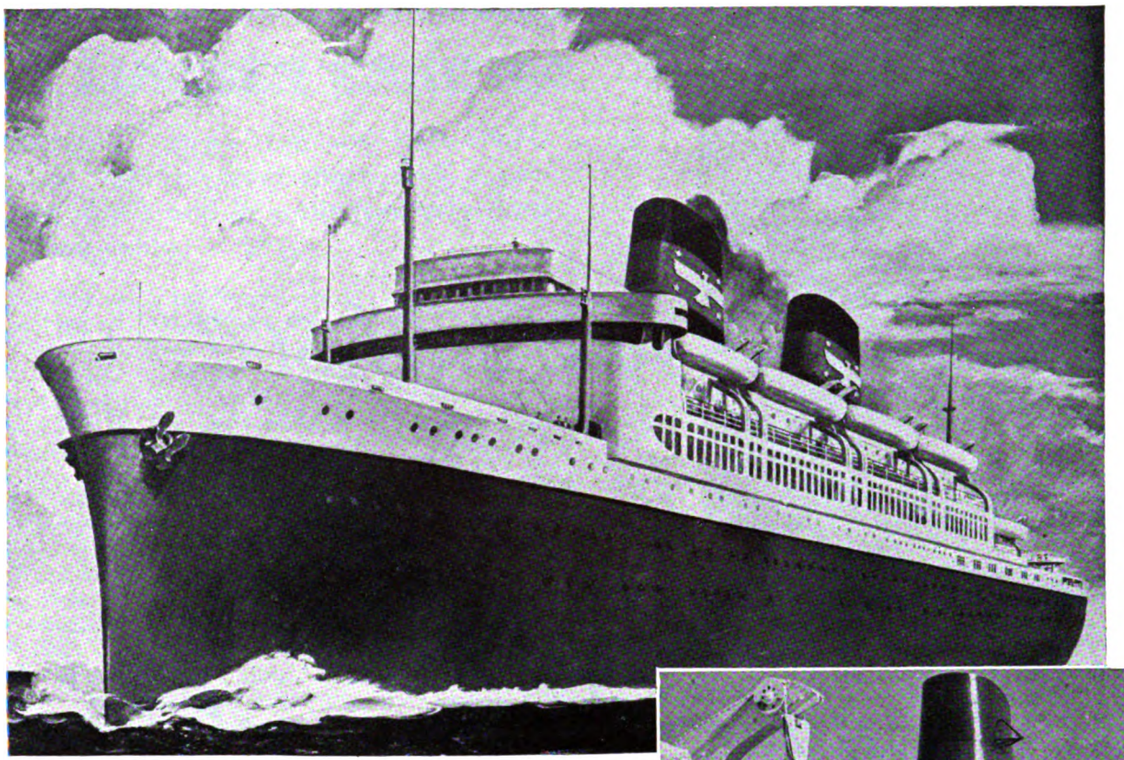

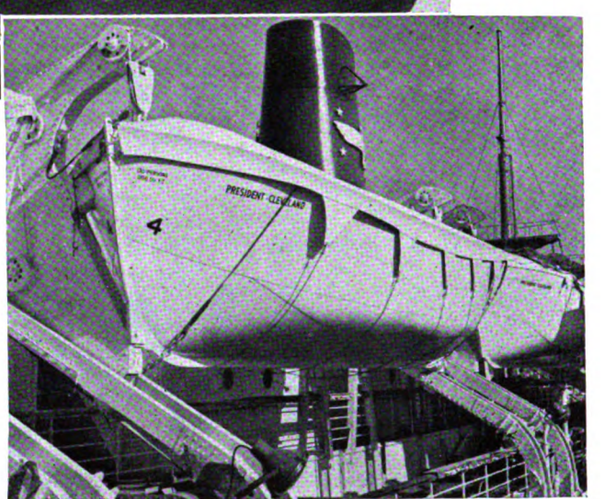

All Aluminum Lifesaving Equipment on the

S. S. PRESIDENT CLEVELAND...

The lifeboats, gravity davits and gravity winches on the S. S. President Cleveland are all corrosion resistant aluminum.

The S. S. President Cleveland will accommodate 552 passengers and a crew of 338. The lifeboat capacity is 934 or 44 more people than the ship can accommodate. This extra safety precaution can be considered when the deck weight of the most modern designed life-saving equipment has been reduced approximately 48% because of aluminum.

Welin's all aluminum gravity davits and winches are the latest design for smooth fool-proof launchings in any conceivable emergency. Even when the power has failed, Welin designed winches and davits can be counted on to perform to their full efficiency.

Welin lifeboats are of rat proof design in accordance with the rigid requirements of the U. S. Public Health Service. The efficient design of the boats provide for easy cleaning or painting.

The S. S. President Cleveland is equipped with the following Welin designed and built all aluminum "matched" life-saving equipment.

FOUR (4) 36'-6" x 11'-9", 135 person hand propelled aluminum lifeboats.

FOUR (4) sets of Welin Type "36A" Aluminum Gravity Davits. For handling 36'-6 hand propelled boats.

FOUR (4) Welin "AH" Aluminum winches with 25 H.P. electric equipment for use in conjunction with type "36A" Davits.

TWO (2) 36'-6" x 11'-9" x 5'-3", 130 person aluminum radio equipped motor lifeboats.

TWO (2) sets of Welin Type "36A" Aluminum Gravity Davits for above motor lifeboats.

TWO (2) Welin "AH" Aluminum Gravity Winches for above lifeboats.

FOUR (4) 26'-0" x 8'-3⅝" x 3'-7½", 46 person Aluminum Rescue Boats.

FOUR (4) sets of Welin "26A" Aluminum Gravity Davits for above rescue boats.

FOUR (4) Welin Type "AHS" aluminum winches with 12½ H.P. motors for above rescue boats.

TRAVEL AND SHIP BY AMERICAN VESSELS

Welin

WELIN DAVIT AND BOAT

DAVIT AND BOAT DIVISION OF AMERICAN STEEL AND COPPER INDUSTRIES, INC.

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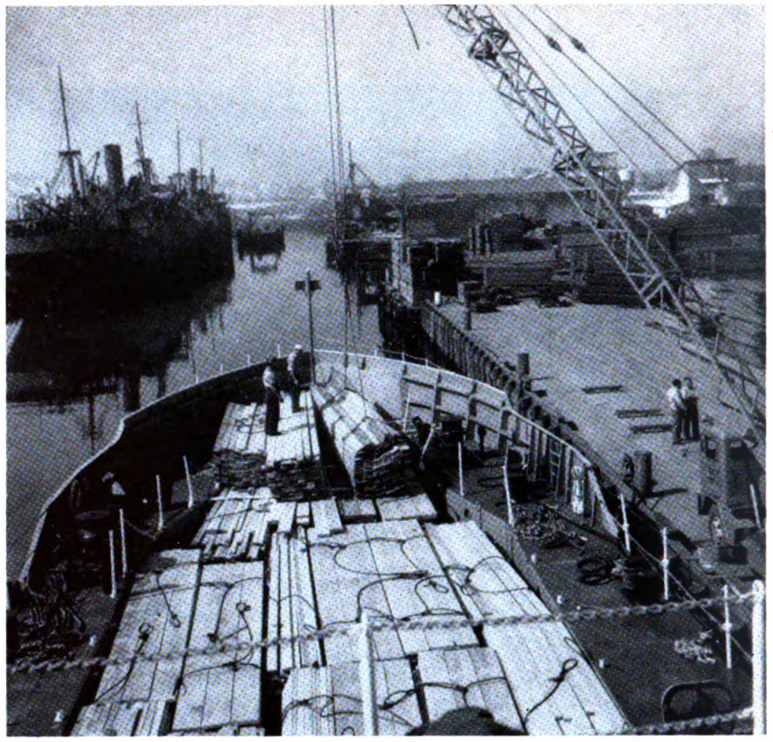
LSM NOW ECONOMICAL FAST LUMBER CARRIER

"Packaged" cargo for ms ROLANDO handled entirely from shore and is carried on decks and in wells formerly used for Army tanks.



SHORESIDE cranes dropping the "packaged" lumber into the deck wells and on the decks of the new lumber carrier ROLANDO.

Unique in her cargo handling methods is the motor vessel ROLANDO, recently converted at North Bend, Oregon, from a Navy LSM into a speedy coastwise lumber carrier which carries no cargo gear aboard because her loads are shipped "packaged," are dropped aboard and lifted off by shore-side cranes and carried entirely on deck and in deck wells.

Irwin & Lyons Lumber Company, North Bend, sawmill operators, bought the vessel out of the Maritime Commission layup fleet at Suisun Bay, California, and towed her to the sawmill dock, where she was converted under the direction of James H. Fricke, San Francisco marine surveyor, formerly port engineer for the Hart-Wood Lumber Company, which operated steam schooners in the west coast lumber trade up to a few years ago.

James A. Lyons, head of the company, gambled the vessel would prove more economical than trucks or rail in hauling lumber to the California markets and said he considered his judgment confirmed when the ROLANDO, on her maiden voyage, covered the 380 miles to San Francisco in 32 hours and unloaded her 517,000 feet of lumber at the docks of the Rolando Lumber Company, a subsidiary firm there, in seven hours. One shoreside crane and six men did the unloading, but it is planned eventually to use two cranes, one fore and the other aft, to do the job in about one fourth of the time needed for conventional lumber handling from ship to shore.

On her second trip, the ROLANDO carried 620,000 feet of lumber to Wilmington, California, and yet wasn't down to her load line of 9½ feet. It is estimated her capacity is approximately 650,000 feet.

Lumber Loaded in Packages

The lumber goes aboard in "packages" of approximately 2,500 feet each and the slings are left on the loads for unloading. There are no cargo holds in the ship and the lumber is stowed topside and in the two wells, each seven feet deep and eighteen feet wide, used in wartime for stowing Sherman tanks. In the conversion, her forward gate was sealed and a collision bulkhead installed.

Lumber has been carried "packaged" in this manner before and has been loaded and unloaded from shore before, but special cargo gear and racks were used and the lumber was carried in holds, Mr. Fricke points out the ROLANDO can work cargo from any dock anywhere strong enough to support a portable crane.

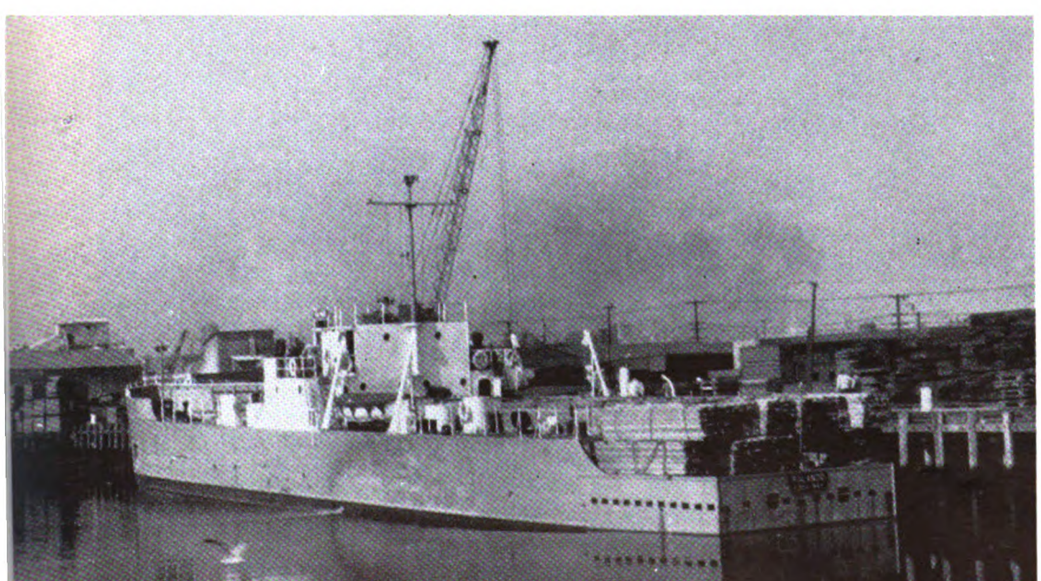
It cost Irwin & Lyons approximately $150,000 to buy the vessel and convert her. A deck house and crew's quarters were built, and the ship meets all the requirements of the United States Coast Guard and the American Bureau of Shipping, for coastwise loadline. Two General Motors Cleveland Diesels, of 1,440 hp each, power the vessel and her engine room includes two De Laval oil purifiers.

The ROLANDO was built by the Pullman Standard Car Manufacturing Company in the Chicago area in 1945 and saw war service in the South Pacific. She is 192 ft. 6 in. in length, between perpendiculars, 34 ft. wide and draws 9 ft. 6 in.

Master of the ROLANDO is Captain E. Stahlbaum, a veteran of the old steam schooners.

JAMES H. FRICKE, top left, San Francisco Marine Surveyor, who directed the rebuilding of the ROLANDO and JAMES A. LYONS, top right, owner of the ship. DON SWIGGART, lower left, Chief Engineer on the ROLANDO's maiden voyage, inspecting one of the vessel's two De Laval oil purifiers; CAPTAIN E. STAHLBAUM, lower right, Master of the ROLANDO.

LUMBER stowed on the decks of the ROLANDO.



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PORT STEWARDS' ASSOCIATION

Official Organ: The LOG

PORT STEWARDS' ASSOCIATION OF THE PACIFIC COAST . . . Shown at their 3rd annual Golf Tournament are: top row, left to right, ROY CEDER, C. J. Hendry & Co.; JACK BOLTS, Luckenbach Steamship Co.; LOUIS LEVIN, Standard Distributing Co.; seated is JOHN PRUNER, retired Purchasing Agent for American-Hawaiian Steamship Co.; AL BUCKNER, Port Steward, States Steamship; AL POTTER and WENN GARRETT of Republic Electric Co.

Bottom row, left to right: JOSEPH M. JADRICH, now Purchasing Agent, Port Steward and Cost Analyst, Pacific Tankers, Inc., San Francisco, with his assistant, GLENN H. WOLFE, formerly in the firm's accounting department. Bottom right: Splitting the big cup—FRANK INGHAM and JACK BOLTS, Luckenbach, tied for the Joe Robinson Golf Trophy and are here discussing it with TIM MULLINS, American President Lines, President of the Association, who is trying to be a Solomon and divide the trophy, with CON CRIMMINS, APL, and JOHN NELSON, Moore-McCormack standing by at the right. Mr. Ingham, formerly port steward at San Francisco for the U. S. Lines, is now in charge of the commissary at the United States Maritime Service Training Station at Alameda, Calif., with the rank of lieutenant.

Seated are PAUL BABCOCK, Pacific Transport; GENE BLANK, Pope & Talbot, and HARRY CHRISTENSON, American-Hawaiian. Bolts and Ingham flipped to see who'd take the cup for the first six months, and Bolts won.

Annual SNA&ME Meeting Scheduled for November

The 56th Annual Meeting of The Society of Naval Architects and Marine Engineers will be held at The Waldorf-Astoria, New York City, on November 10th to 13th, 1948.

The annual meeting of the Council of the Society is scheduled for the afternoon of November 10th. On November 11th and 12th papers on technical subjects related to the shipping and shipbuilding industries, prepared by experts in their field will be presented and discussed by members. Admiral E. E. Cochrane, President of the Society, will preside.

On November 12th, the Annual Banquet of members of the Society will take place in the Grand Ballroom. The meeting will close the following day with a Dinner-Dance for members, wives and guests.

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SNAME Announces Program Schedule

The New York Metropolitan section of the Society of Naval Architects and Marine Engineers made public its program of meetings and events for the 1948-1949 season. A comprehensive schedule has been arranged by the Papers Committee, headed by Everett Clark of Westinghouse Electric Corp., under the direction of the new Chairman of the Section, William B. Jupp, Manager, Marine Construction & Repair Division, Socony-Vacuum Oil Co.

The members convened in September for the first session of the season to hear an address on the subject of "Future Prospects of the American Merchant Marine." This was followed in October by a visit to the U. S. Naval Shipyard at Brooklyn for an inspection tour in the afternoon, and a talk by Admiral Fred Haeberle, Commandant.

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PNW Section Naval Architects Meets in Gearhart in October

The regular quarterly meeting of the Pacific Northwest Section of the Society of Naval Architects and Marine Engineers met October 1, 2 and 3 at Gearhart, Oregon. Technical sessions took place October 2 and the official banquet followed in the evening.

THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

Tracy Named Chairman New York Society

E. J. Tracy, superintendent engineer, Agwilines, Inc., was elected chairman of the board of directors of The Society of Marine Port Engineers New York, N.Y., Inc., at the September 1st board meeting. He will serve out the unexpired term of A. J. Ivey, port engineer, Alcoa Steamship Co., who was transferred to New Orleans July 1st. Mr. Tracy has been a director of the Society since it was organized in 1946.

Associated with Agwilines and its predecessor companies for the past twenty-two years, Mr. Tracy was a chief engineer for the Clyde-Mallory Line for ten years, port engineer for Agwilines for eight years and has served as the company's superintendent engineer since 1944.

NEWLY-ELECTED Chairman of the Board of the Directors of The Society of Marine Port Engineers New York, is E. J. TRACY, Superintendent Engineer, Agwilines, Inc.

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THE SOCIETIES OF PORT ENGINEERS

LOS ANGELES . . . C. C. (DINTY) MOORE, JR., Research Superintendent of the Union Oil Company at Wilmington, California, spoke before The Society of Port Engineers, Los Angeles, at its September meeting discussing the manufacturing and characteristics of turbine oils. Attending the meeting were: top row, left to right, DAN DOBLER, Texas Oil Co.; HAROLD ATKINSON, Lancashire Shipping Company, New York and London; TOM COLLAZO, National Bulk Carriers; JAMES L. LAYTON, Welding Shipyard, Norfolk, Virginia; HARRY E. McEWING, American-Pacific SS Co. Second row, RAY C. INGRAM, District Manager, Union Oil Co., Long Beach; M. C. WRIGHT, Deconhil Shipping Co.; JOHN BLACK, American Bureau of Shipping.

SAN FRANCISCO Port Engineers hear General Electric's George Barr and Hughes Ogilvie discuss phases of the turbo-electric drive at their September meeting. Second row photo to extreme right, from left to right: HUGHES OGILVIE, PHIL THEARLE, United States Army Transport Corps, President of the Society; GEORGE BARR and MARSHALL T. J. GARLINGER, USAT, Chairman of the program committee. At the next meeting, October 6, E. F. Griep, Standard of California, and F. J. Hanly, California Research Corporation, will tell the San Francisco port engineers what they should know about lubricating oils.

THE SOCIETY OF PORT ENGINEERS OF PUGET SOUND SECOND ANNUAL PICNIC. 401 persons checked in; 352 turned in chow tickets; 135 pounds of barbecued beef, 85 pounds of ham, 300 frankfurters, 66½ dozen buns, 75 pounds of potato salad, 32 pounds of potato chips, 5 sheets of chocolate cake, 45 gallons of coffee, 40 cases of soft drinks and beer and many trimmings were consumed; and more than 100 prizes donated by 64 ship suppliers and ship repair firms were awarded.
Included among those present were: Third row, left to right, Mrs. and Mr. Q. A. HERWIG, Marine Service, Inc., sponsors of the chow and refreshment part of the program; Committee Members: E. A. TUCKER, U. S. Maritime Commission; V. J. NELSON, ATC; H. E. LOVEJOY, Puget Sound Freight Lines (seated); R. C. STORRS, American Mail Line; CAPTAIN L. C. PERRY, marine surveyor; LEWIS M. DIAL, JACK P. ROBB, J. F. McGUIRE, ATC.

Bottom row, left to right: representatives of a few of the firms which donated prizes: GEORGE W. PETERSON, JR., Todd Shipyards Corporation; A. W. PATERSON, Consolidated Services, Inc.; J. C. PAVEY, Consolidated Services, Inc.; WILLIAM D. TRENKO, Bardahl Oils; D. B. HAYWARD, E. F. Drew & Company; ROBERT G. ZENER, Todd Shipyards Corporation (aft); F. J. CATER, Lubaid Company; E. C. GILES, ROBERT W. LANDON, John H. Marvin Company; T. E. SPARLING, Pavey and Sparling; J. C. LANE, Seattle representative, Oxi Corporation, DeBoom Paint Company, Quaker Pacific Rubber Company; The chefs: E. D. TUCKER, U. S. Maritime Commission; JOHN W. ELKINS, Board of Marine Underwriters of San Francisco; FRANK GALLAGHER, American Bureau of Shipping; H. E. EMMONS, marine surveyor.

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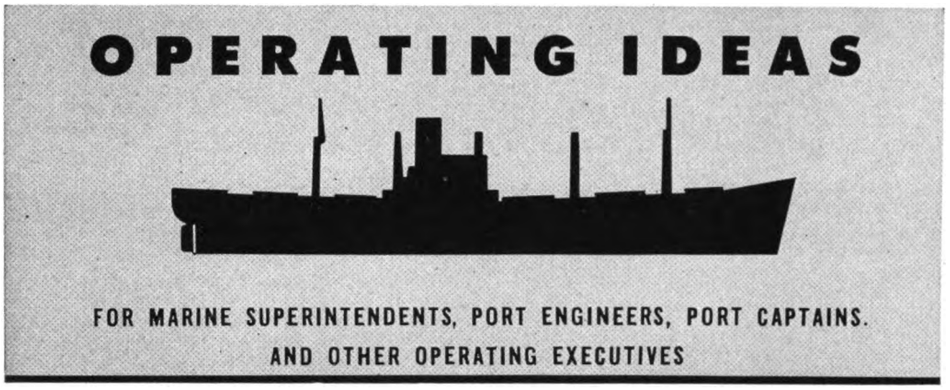

FORCED-CIRCULATION BOILERS FOR MARINE USE

By ROBERT P. GIBLON
Marine Engineer
George G. Sharp

All large modern marine steam boiler units employ the forced-circulation principle to all surfaces except the water wall and generating sections. For example, the economizer, air heater and superheater each operate on forced-circulation by virtue of the respective differential in head established by the feed pump, forced draft fan and pressure drop between the drum and superheater outlet. It seems logical, therefore, to extend the forced-circulation principle to the water wall and steam generating surfaces and this has been done to some extent in boilers on shore installations.

Few large marine forced-circulation boilers have been installed in merchant vessels and all of these installations are in foreign tonnage. Numerous small forced-circulation boilers were installed aboard vessels built in this country for use as donkey boilers on Diesel vessels. The boilers installed aboard many of the U. S. Maritime Commission design C1-M-AV1 Coaster Vessels are a good example of this type of installation. Here the type of unit installed was similar to those used by the railroads in Diesel and electric locomotives.

Four Basic Types

In general there are four basic types of forced-circulation boilers which are known as the Benson, Steamotive, Loeffler and La Mont types of units.

The Benson design is of the "once-through" type. The feed water, after leaving the feed pump, enters the economizer section and is discharged to the furnace circuits where the steam starts to generate. The mixture of steam and water then flows to the transition section where the last of the water is evaporated whence it passes through the superheater section and is delivered to the steam main. Since a steam drum is not provided, the impurities in the water must either remain in the transition zone or be carried through to the steam main and prime mover. This condition results in high maintenance costs for both the boiler and prime mover.

To overcome the difficulties encountered with the Benson type unit from impurities in the feed water the Steamotive boiler was developed. This design is similar to the Benson type except that the steam is not evaporated to complete dryness in the generating tubes since evaporation is not carried beyond the point where the dissolved solids can be retained in solution in the concentrated boiler water at the heat-transfer surface. The mixture of steam and water is then discharged into a drum in which the steam is separated from the water where the impurities may be removed either continuously or intermittently to maintain the desired maximum concentration. In both of these designs, very sensitive and responsive automatic controls must be fitted. This is especially true for the Benson type since no drum is fitted and the quantity of water that may be stored within the boiler is very small.

In the Loeffler type of boiler, feed water after leaving the feed pump passes through an economizer section and is discharged to a steam drum where it is evaporated by direct contact with superheated steam. The steam from the drum is then delivered to a radiant and a convection superheater by means of a steam-circulating pump. That portion of the superheated steam not required for evaporating the entering feed water is delivered to the steam main and prime movers. Since all evaporation takes place in the steam drum, the hazard of solids being deposited on the heating surface is eliminated. However, this boiler requires considerably more surface since most heat transfer occurs between tubes containing superheated steam where the heat transfer coefficient is relatively low compared to tubes containing water.

In the La Mont design feed water is delivered via an economizer to a steam drum in the usual way. From the lower portion of the drum a connection is provided to a circulating pump which discharges to the radiant and convection generator surfaces. The resulting mixture of steam and water is then delivered to the steam drum where the steam is separated out and discharged to the steam main and prime movers. The water is then mixed with the incoming feed and recirculated by means of the circulating pump through the generator sections. Numerous large shore installations of this type have been made in Europe as well as in this country and this design appears to be the most promising for marine applications.

In the steam generating section of a natural circulation boiler, the head available for circulation is that created by the difference in density between the fluid in the downflow and upflow circuits, respectively, minus the loss of head caused by fluid friction, turbulance and acceleration. In the forced-circulation boiler these limitations do not exist. Therefore, relatively small, thin walled tubes can be used resulting in higher heat transfer rates and lower tube temperatures. Also, since natural circulation is not relied upon to assist in the movement of water through the tubes, the tubes may be arranged in horizontal rows in series or several vertical passes in series. The resulting advantages to be gained in using the forced-circulation boiler are a saving in material, weight and space. Also if desired, the height of the boiler may be reduced to half or less that of a conventional boiler. The above advantages are particularly important at higher pressures of about 1200 pounds per square inch where the difference in density between steam and water is not so great.

Disadvantages

To offset the above advantages, the primary reasons for not installing large forced-circulation boilers on merchant vessels are as follows:

1. No advantage in thermal efficiency can be gained by using a forced-circulation boiler.

2. Natural-circulation marine boilers are in operation performing at pressures of about 1400 pounds per square inch and their operation has been very satisfactory. Also, the space occupied by these boilers has not been so excessive as to make their installation in the conventional size engine room difficult.

3. All forced-circulation boilers depend upon the continuous operation of either a feed pump or steam boiler or water circulating pump. Therefore, should a pump stop, damage to the tubes due to overheating is very likely to occur.

4. In the case of the La Mont and Loeffler boilers, the packing of the pump shaft presents a serious design problem since the operating pressures and temperatures of the pumps are high. Also, in the case of the La Mont design rapid fluctuations in steam demand will result in pressure fluctuations and resulting circulating pump difficulties. For example, a quick demand for steam such as would be encountered while maneuvering will result in momentary lowering of the steam pressure and flashing at

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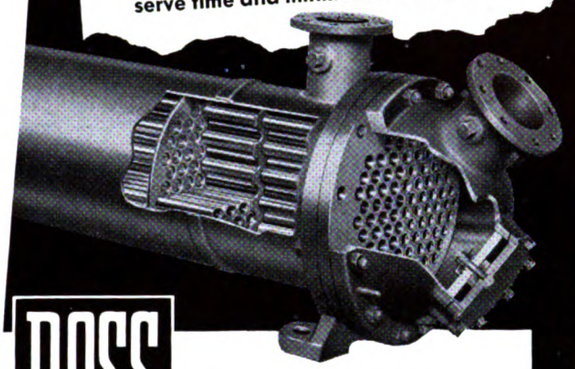

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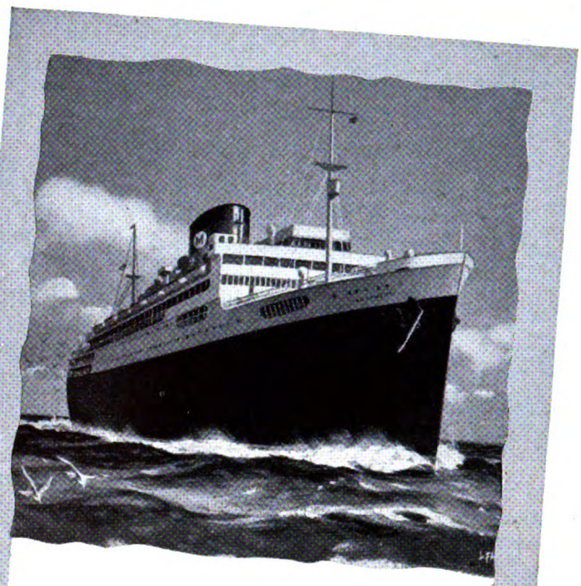

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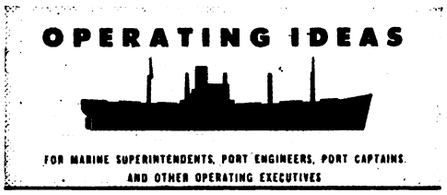

the circulating pump suction. The flashing of the water to steam at the pump suction will prevent the pump from delivering water to the tubes, thus resulting in a break down of circulation and probable tube failures. This difficulty can be overcome but only by the installation of a dump valve with necessary piping and controls so that the steam rate of the boiler is maintained constant by the dumping of all excess steam while maneuvering to a condenser.

5. The overall development costs for installing boilers of this type would be high especially for the first one or two vessels and these costs would probably exceed any savings involved by installing boilers of the conventional design.

STABILITY AFTER FLOODING

By EDWARD V. LEWIS
Naval Architect
George G. Sharp

As discussed in a previous article, careful consideration is usually given in the design of modern merchant ships to providing the maximum amount of safety in case of possible accidental flooding of part of the ship. However, the ship's officer may in some cases be insufficiently informed as to what he should and should not do after an accident occurs. This statement is not true of naval officers, of course, since the Navy prepares very complete detailed instructions for "damage control" procedures. This results, no doubt, from the greater likelihood of a combatant vessel sustaining damage when functioning in its designed service than a merchant ship in its peacetime operation. It is the purpose of this article to deal with damaged stability from the point of view of the merchant ship's officer *after* damage has occurred.

Of necessity, the suggestions given here must be general, not only because of the many differences between individual ships but because of the wide variations in circumstances accompanying possible accidents. More specific suggestions are, or can be, made up by the ship's builder or designer for the guidance of the officer. Other points may occur to the experienced mariner which would not occur to a naval architect.

Preparedness

As pointed out in last month's article, the routine steps taken prior to an accident are often more important than any steps which may be taken afterwards. The following points should be carefully considered in everyday operation.

1. Maintaining sufficient GM at all times —as much more than that required for damaged stability as can be maintained without causing undue discomfort.
2. Maintaining in good condition all gear and equipment which would be of importance in an emergency, e.g.:
   (a) Watertight doors and operating gear,
   (b) Side ports and operating gear,
   (c) Airports, and dead covers where needed,
   (d) Equalizing pipes, ducts, valves and operating gear,
   (e) Deck cargo lashings,
   (f) Hatch covers and tarpaulins,
   (g) Scupper valves.
3. Making sure that all officers are familiar with the ship's damaged stability booklet and the general problem of stability after damage. The location and use of all devices affecting the safety of the ship should be known to them, and they should be prepared to take the proper steps in case of emergency.

Ship With No Heel After Damage

It is difficult to formulate rules which will be generally applicable to all ships in all possible conditions of damage, but it is possible to outline a few hypothetical cases of flooding and to suggest steps which would be helpful in those specific cases.

As a first example then, let us assume that during a heavy fog a cargo passenger ship with a C3 hull, fully loaded, had been rammed by a freighter just forward of the bridge. Although the officer on watch immediately called through a megaphone to the other ship asking it not to pull away, the ship did withdraw from the hole in the side, permitting water to flow in. Accordingly all power operated bridge controlled watertight doors were immediately closed from the bridge and orders were issued for closing all hinged watertight doors and closing and fitting dead covers on all airports. Men were dispatched to determine the extent of damage and flooding. Meanwhile, the ship's course was changed to take the seas as easily as possible.

The ship's Stability Letter and Damaged Stability Booklet, both of which were already familiar to the officers, were referred to for specific instructions in case of damage. One instruction which appeared to have possible application stated that the equalizing valves between port and starboard deep tanks in No. 2 hold should be opened in case of flooding a tank on one side when tanks were empty. However, it was known that these tanks were part full and therefore the equalizing valve was not opened, since to have done so would only have increased the free surface effect and thereby reduced the GM. Since the ship remained upright, apparently these tanks were not seriously affected by the damage, but in order to watch for a possible slow leak, soundings were taken at regular intervals. (If soundings and an observed list of the vessel had indicated that the tank on the damaged side was filling from a leak in the shell or bulkhead, then since freeboard was still ample to second deck (bulkhead deck), the equalizing valve should have been opened to permit both sides to fill equally. Under those circumstances it would have been better to let both sides fill up, thus eventually eliminating both the heeling and the free surface effects, than to let one side only fill.)

The survey of damage showed there was a hole about 20 feet long at the forward end of No. 3 hold, extending from the weather deck down to below the water line. The men entering the after end of No. 2 hold found several sizable leaks above the deep tank top. Cargo was cleared away to give good drainage to the drainwell and immediate steps were taken to temporarily patch the bulkhead. Small leaks also appeared in the forward engine room bulkhead around fittings. Fortunately the ship's bilge pumps proved adequate to handle these secondary leaks in No. 2 hold and machinery space, though of course they could not cope with the major flooding of No. 3 hold. Wood shoring was applied to the forward engine room bulkhead where it bulged from the water pressure. A scupper in the machinery space which was now below the waterline also developed a leak but it was repaired satisfactorily.

The cargo diagram for the voyage was examined and the cargo found to be of types which would not cause dangerous swelling. (If there had been a cargo of grain, for example, bulkheads would have required shoring and hatches would have had to be opened to allow for the expansion.)

Although the ship remained upright, her rolling was slow and sluggish even after the equalizing and filling of the deep tanks had been carried out, indicating that GM was quite low. A careful check was then made of means to improve GM. All tanks having been sounded, it was found that several double bottom tanks were slack. Accordingly, immediate steps were taken to press them up, thereby not only adding low weight but reducing free surface effect. The No. 1 and No. 6 double bottom tanks were empty, and it was decided to fill the No. 6 tanks aft in order to improve trim as well as stability, since filling these narrow tanks would have a very small free surface effect.

With these steps accomplished there was a noticeable improvement in both stability and trim, and leaks seemed to be under control. As a further precaution against the possibility of greater sinkage, steps were taken to rig temporary clos-

(Continued on page 50)

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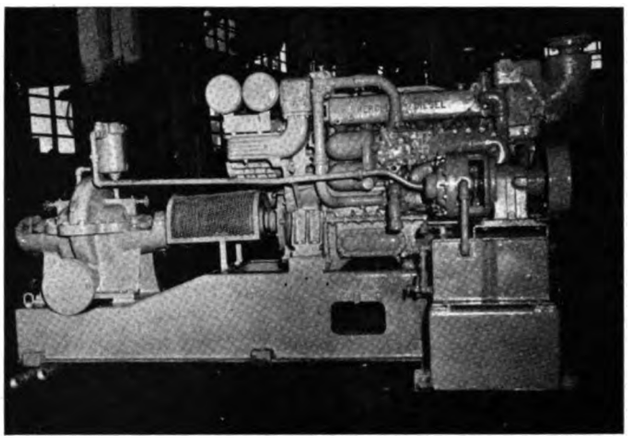

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HERCULES DIESEL ENGINE MODEL DWXDS

Bore and Stroke	4¼"x4¾"
No. of Cylinders	6
Cycle of Operation	4 stroke cycle
Full Load Speed	1800 r.p.m.
Idle Speed—approximately	1400 r.p.m.
Supercharger Speed—(Engine 1800 r.p.m.)	2200 r.p.m.
Piston Displacement	404 cu. in.
Firing Order	1-5-3-6-2-4
Compression Ratio	15-1

Rotation: Clockwise, standing in front of the engine (timing gear end) and looking at the engine and pump.

Specifications

ALLIS-CHALMERS CENTRIFUGAL PUMP

Capacity	1000 g.p.m.
Total Head	280 ft.
Liquid	water
Temperature	85 F.
Specific Gravity	1.03
Suction Lift	20 ft.
Speed	1800 r.p.m.
Pump Efficiency	74%
Brake Horsepower	115
Size and Type	6"x5" SJS
Impeller Diameter	15-11/16 in.
Weight	800 lbs.

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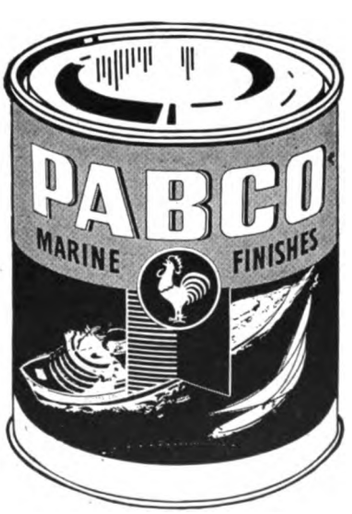

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ures, as near watertight as possible, over the tonnage openings at the forward end of No. 3 upper 'tween decks.

There was some discussion about the advisability of filling the deep tanks in No. 2 hold, which were approximately 75% full, in order to improve GM by reducing free surface effect. However, it was decided not to fill them for the following reasons:

(a) Stability had been appreciably improved by the other steps mentioned above,
(b) Filling these deep tanks would increase the draft considerably, thus reducing freeboard and reserve buoyancy,
(c) Filling these tanks would increase the trim by the head, which would be undesirable.

Instead it was decided to start pumping liquid from the forward pair of tanks into the after pair (in No. 2 hold). When the after tanks were filled, the free surface effect was then eliminated from them and a further improvement in stability resulted.

Since the ship's machinery was not affected by the collision, and trim was such as to give fair propeller immersion, the ship was able to proceed to the nearest port under its own power.

Ship Listing After Damage

As another example of a more serious condition, let us assume that the same ship after similar damage took a list of about 16 degrees within a few minutes after the collision. Similar steps were taken as in the other example, except that here the reduction of the list became the primary problem. In this case the deep tanks in No. 2 hold were known to have been empty before damage and therefore the equalizing valves were opened after soundings indicated that the after tank on the damaged side had been flooded. Within a few minutes a gradual reduction in the list was apparent continuing until an angle of 9 degrees was reached. The reason for this remaining list appeared to be negative GM, because the ship rolled in a sluggish manner and no possibility of further off-center flooding could be found. Accordingly it was decided that it would be dangerous to attempt to correct the remaining list by filling a tank on the side opposite to the damage, but instead, to concentrate on means of increasing GM. The wisdom of this decision was illustrated shortly by the ship's sudden "flopping" over to the other side under the influence of a heavy sea and remaining at approximately the same angle as before, listed to the other side. Obviously if a tank on that side had been filled in an attempt to correct the remaining 9 degree list it would have caused the ship to go to a still greater angle when the "flopping" occurred.

The steps outlined in the previous example for improving stability acted to further reduce the heel, although not to eliminate it. The only other empty tanks were the No. 3 double bottoms, but they were not filled since the free surface loss would have been so great during the filling process as to have caused a much greater list and possible capsizing of the ship in its tender condition.

The vessel was able to make port in spite of the remaining list.

General Comments

The above examples indicate some types of positive action that would have been helpful in certain assumed cases. They suggest that after steps have been taken to limit the flooding as much as possible, the main problems are to improve stability and to reduce list, if any. Before any steps are taken to accomplish these ends, however, the exact nature and extent of the damage should be determined. If the ship has a list, the possibility of negative GM must be very carefully considered. Then the effect of any proposed step on the following factors must be investigated before action is taken:

1. Draft, and therefore freeboard and reserve buoyancy,
2. Trim,
3. List,
4. Vertical center of gravity of the ship,
5. Free surface of liquids.

If the ship has a list and negative GM appears possible, special care must be exercised since it is very easy to make matters worse instead of better.

Pumping out a tank is apt to be particularly dangerous at any time because of the reduction in low weight, together with free surface effect. Furthermore, it may be impossible for a number of reasons to completely strip the tank after pumping has been started.

In short, the problem of stability after flooding requires a thorough knowledge of the ship and great caution in the use of corrective measures.

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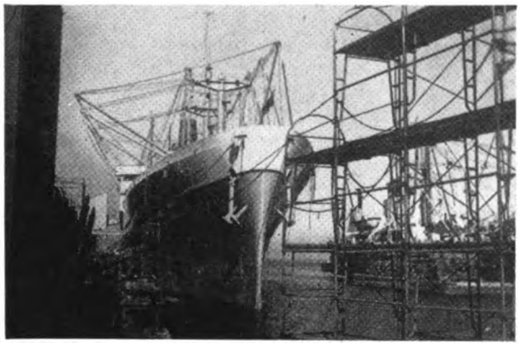

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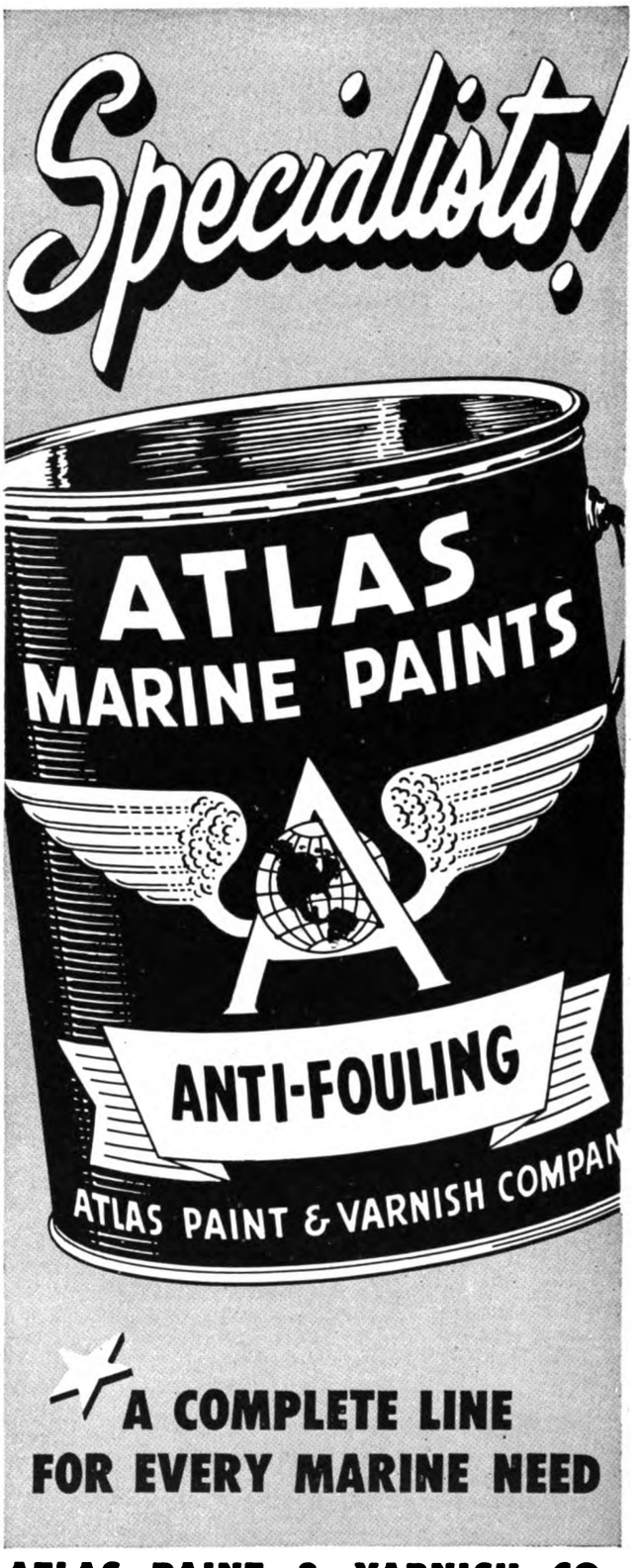

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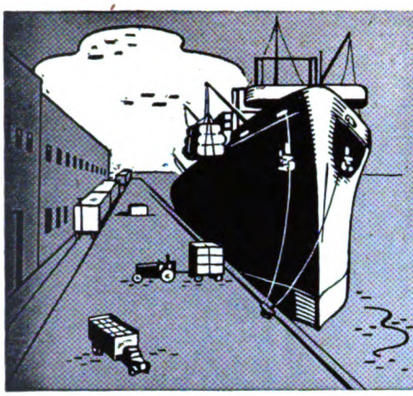

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Alex D. Stewart, Editor

Northwest Port Men Hold Annual Session in Everett

Northwest Rivers and Harbors Congress recently held its 23rd annual convention at Everett, Washington, and passed resolutions favoring:

1)—Legislative allotment of shipbuilding and ship repair work to Pacific Northwest shipyards to enable them to remain in a stand-by condition readied for any national emergency.

2)—Establishment of a Foregn Trade Zone in the Puget Sound area.

3)—Surveys of Army Engineers at Newport and Taft, Oregon, with the view of enlarging the turning basin at Yaquina Bay and deepening the channel in Siletz Bay.

4)—Construction of Shilshole Bay breakwater at Seattle.

5)—Exemption of the Corps of Army Engineers from any legislation which will transfer civil work functions of that body to any other agency.

Convention speakers included United States Senator Harry P. Cain, Congressman Henry M. Jackson, Colonel Theron D. Weaver, division engineer of the War Department; Colonel L. D. Hewitt, district engineer and Professor Charles J. Miller of the University of Washington.

Representative Jackson said he believed Pacific Coast shipyards should continue active and favored legislation permitting the United States Maritime Commission to subsidize western shipbuilding on possibly an 11% differential over eastern yards.

Vancouver, Washington, was named as the 1949 convention city.

⚓ ⚓ ⚓

Harvey Appointed Manager Of New P.N.Y.A. Office

The appointment of Lloyd L. Harvey as manager of the Port Authority's trade promotion office in Washington, D. C., was announced recently by Howard S. Cullman, chairman of the Port of New York Authority.

Mr. Harvey previously was executive general agent of the Port of New Orleans, with headquarters in Washington. The new Port Authority office, which will augment that of the bi-state agency's associate counsel, Wilbur LaRoe, Jr., will be located at 711 Stoneleigh Court Building, 1025 Connecticut Avenue, N. W.

"It is vital to the New York-New Jersey port area that the Government be kept fully advised on the advantages of shipping through this port, goods moving overseas under the ERP and other United States commitments," said Mr. Cullman.

⚓ ⚓ ⚓

Port of Baltimore Opens New York Office

On September 1st the Baltimore Association of Commerce opened a Port of Baltimore office in New York, as a further move to broaden and intensify its

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J. P. Doyle, Portland
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APPLICATIONS ARE FILED FOR TWO MORE FOREIGN TRADE ZONES ON THE WEST COAST . . . Left, Los Angeles Harbor Commissioners watch ARTHUR ELDRIDGE, General Manager, formally sign the application of the Port of Los Angeles for a Foreign Trade Zone to be established at the $1,500,000 Municipal Warehouse No. 1 situated at the entrance of the main channel. A total ground area of 5.24 acres and a water area of 1.17 acres has been set aside by the Harbor Department to house the free zone. Left to right: ARTHUR ELDRIDGE, Commissioners HAROLD W. TUTTLE, ROY BEATON, KENNETH CHANTRY and President C. S. SAMPSON

PORT OF SEATTLE, right: Inspecting presentation accompanying the application to the Federal Foreign Trade Zone Board for a trade zone on the Seattle waterfront are seated, J. A. EARLEY, President of the Port of Seattle Commission; standing, left to right: E. H. SAVAGE, Vice President of the Port Commission; CHARLES J. MILLER, Professor of marketing at the University of Washington and Chairman of the Chamber of Commerce's Foreign Trade Zone Committee; and A. B. TERRY, Port Commission Secretary.

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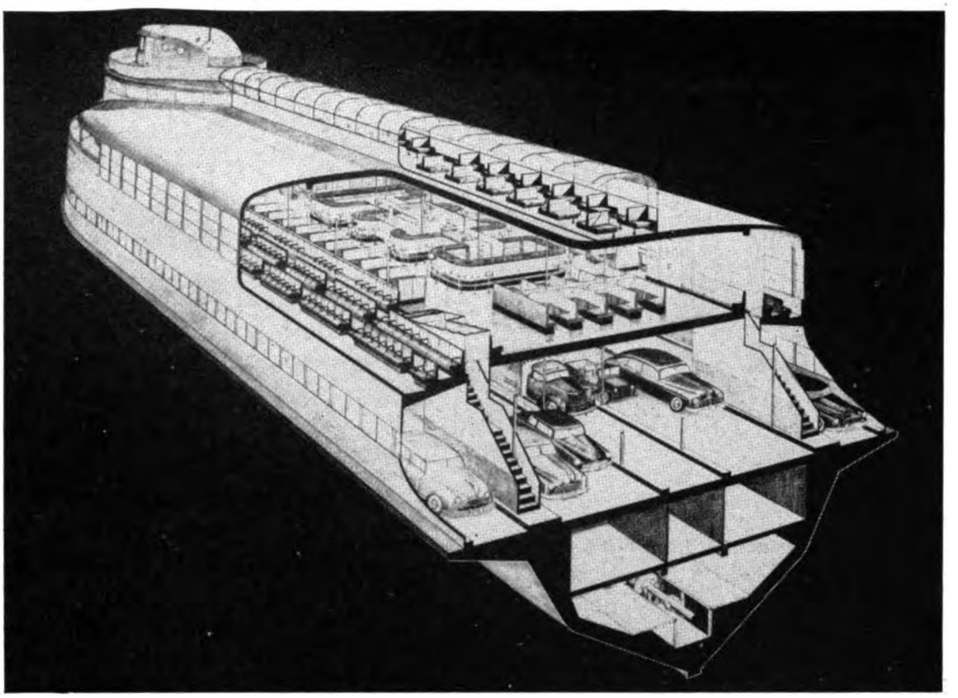

ONE OF THREE TYPES OF FERRIES DESIGNED FOR PUGET SOUND SERVICE . . . A cut-away sketch of 100-car and passenger ferry, one of three types of ferries designed by W. C. Nickum and Sons, Seattle, for the order of the state of Washington Toll Bridge Authority. The other two designs are for a 500-passenger 60-car ferry, and 100-passenger 60-car ferry. Purchase and operation by the state authority of ferry system operated in domestic waters by the Puget Sound Navigation Company, and gradual replacement of the ferries now in operation with these streamlined types; or placing newly-constructed ferries of these types in competition with the Puget Sound service, has been discussed in Puget Sound circles for several weeks.

owners, under a separate $400,000 contract.

Albina Engine and Machine Works, Inc., Portland is working on a new tug for Willamette Tug and Barge Company, recently completed the conversion of the former Great Lakes steamer W. J. CONNERS into a floating herring reduction plant for Iceland interests, and continues with conversion work on the escort carrier LONG ISLAND to cargo vessel for foreign interests headed by Sven Salen, Swedish shipowner.

Major work in the Puget Sound area includes conversion of four C-2 type vessels for Waterman Steamship Company, two at Todd's Shipyard Corporation, Seattle, and two at Everett-Pacific Shipbuilding and Drydock Company, Everett, each at cost approximating half million. Work on these four is to be completed in late October and early November. At the Winslow plant of Commercial Ship Repair conversion of a Navy YO tanker to a bulk wine carrier for Compania Naviera, Ltd., of Panama was completed in late September. New work at the Winslow yard includes construction of a new tug for the City of Seattle.

program for Baltimore's economic growth it was announced by G. H. Pouder, executive vice president of the Association.

Baltimore's port office in New York will be located at 111 Broadway, and will be in charge of Benjamin R. Yates, now district manager of the American-Hawaiian Steamship Company in Chicago.

"The New York office follows establishment of the Association's Port of Baltimore office in Chicago which opened on September 1, 1946 and has shown good results," Mr. Pouder stated. "Both offices were recommended by the Port Planning Committee of our Export and Import Bureau, and the New York headquarters has now been specifically authorized by our Executive Committee."

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American Mail Performs Own Stevedoring At Portland

W. L. Williams, district manager, American Mail Line, Portland, Oregon, has announced the appointment of James S. Kemp as stevedoring superintendent, while at the same time announcing company plans to perform all its own stevedoring in place of contracting to other firms as has been the practise heretofore.

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Pacific Northwest Yards Busy With Ship Conversions

A $900,000 ship reconversion job, divided into two 90-day contracts to run concurrently is underway at Willamette Iron and Steel Company, Portland, with completion set for late November. The ship is the C-2 troopship COMET, which the company will restore to original merchant vessel status for the Maritime Commission under a $494,500 contract, and also will modernize and outfit to fit the needs of the United States Lines, the new

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Marine Insurance Company, Ltd. . . .	9,606,758.22	4,506,258.42
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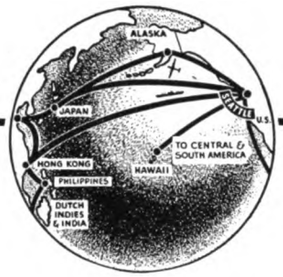

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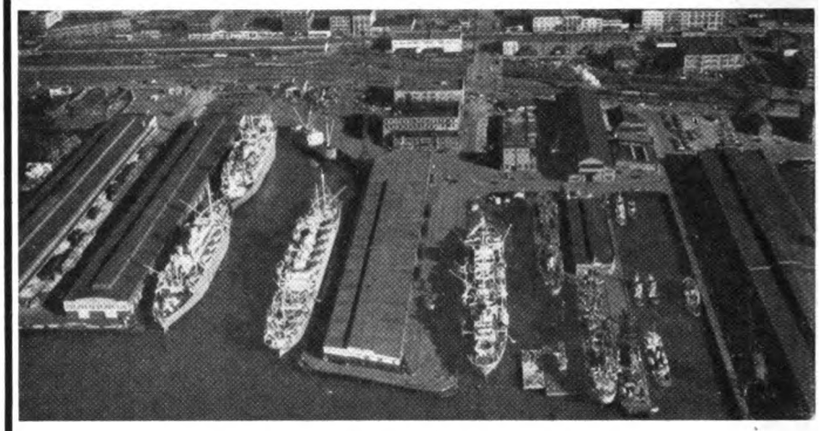

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SHIPBUILDERS COUNCIL HAILS NEW PASSENGER SHIP PROGRAM

According to the Shipbuilders Council of America the award of contracts for five new passenger ships is the culmination of joint efforts by the United States Maritime Commission and private shipping operators to inaugurate a post war passenger shipbuilding program under the provisions of the Merchant Marine Act of 1936.

On August 9, the United States Maritime Commission, on behalf of the American Export Lines, awarded a contract to the Bethlehem Steel Company (Shipbuilding Division) for two fast passenger liners for Mediterranean service.

On August 18, the Commission, on behalf of the American President Lines, awarded a contract to the New York Shipbuilding Corporation for three passenger vessels for Around-the-World service. Dates for keel laying have not yet been established. Deliveries are scheduled for April, June and August 1950.

Last Contracts Awarded in 1940

The last contracts for combination passenger-cargo vessels in behalf of private shipping operators, exclusive of a few such vessels completed shortly after the war as a part of the war shipbuilding program, were awarded in 1940 and covered six such vessels of about 8,000 or 9,000 gross tons each, three each for two different operating companies.

Thus, the Shipbuilders Council pointed out, it has taken eight years to bring about any real contribution to the rebuilding of the passenger fleet of the Merchant Marine which suffered such heavy casualties as a result of its outstanding and indispensable war service. The award of these contracts in effect marks the first step in the consummation of the Maritime Commission's post war passenger liner program which was so abruptly terminated in the summer of 1946.

The award of these contracts also constitutes a milestone in the Maritime Commission's post war shipbuilding program as well as the beginning of the new passenger vessel fleet recommended in November 1947 by the President's Advisory Committee on the Merchant Marine.

The President's Committee recommended that construction of 46 passenger vessels be initiated by 1951, eight of which were to be laid down before the close of the fiscal year ending June 30, 1948.

In April of this year, Mr. Sullivan, Secretary of the Navy, in outlining the military service's need for passenger ships suitable for use as troop transports, and tankers, before the House Committee on Merchant Marine and Fisheries, asked for the immediate construction of 50 fast passenger vessels capable of carrying 2,000 to 10,000 troops each and for the equivalent of 170 T-2 tankers. He further requested that such ships be completed by 1951.

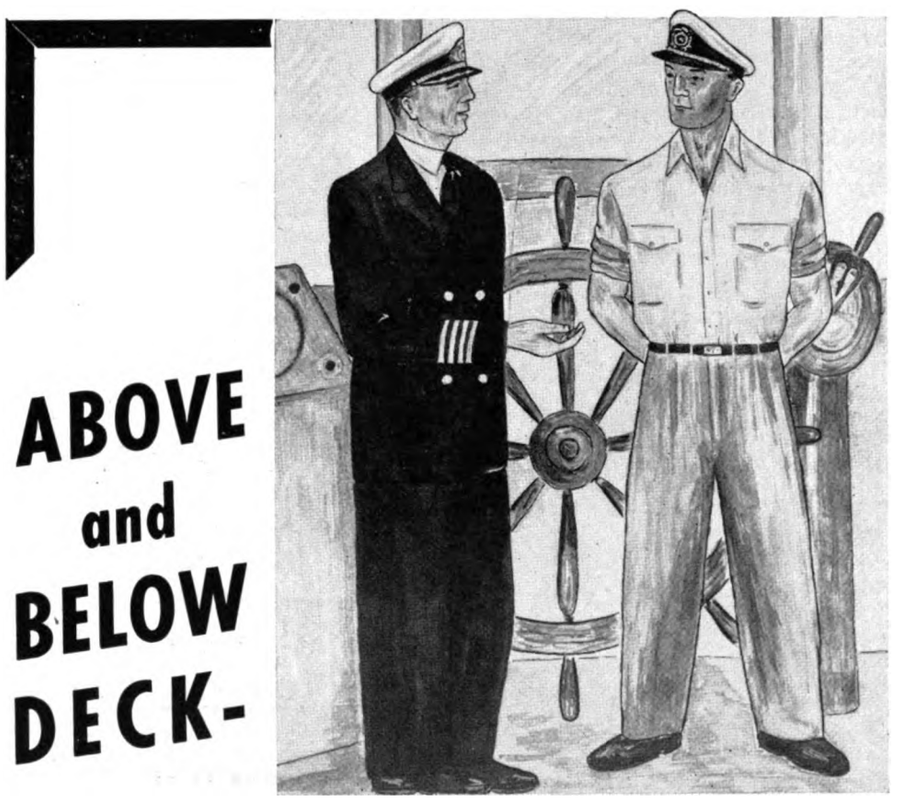
The Maritime Commission is reported to be negotiating with ship operators on possible construction of several additional passenger ships, contracts for which, if consummated, might bring new passenger vessels under contract up to the eight which the President's Committee recommended be laid down in the fiscal year 1948.

The Shipbuilders Council explained that the existing passenger ship contracts will not only retain the vital technical and mechanical skills but will tend to build up the staffs of employees in the two yards involved, at least until the fall of 1950, but that a long range program with definite continuity must be developed to provide for the retention of these skills and staffs after 1950 in these yards and in the near future in the other shipyards.

Awarded Differential Subsidies

The United States Maritime Commission, under authority of the Merchant Marine Act of 1936, awarded construction differential subsidies to the American Export Lines and to American President Lines of 45 per cent and 44.05 per cent respectively. Funds have already been appropriated by the Congress to cover the government's contribution to the construction of these vessels, made necessary as a result of higher labor and material costs in this country as compared with those abroad.

These two contracts will result in substantial increased employment in the two yards involved, and in the allied industries.



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EQUIPMENTALK

Pilot Salinity Equipment On 95% of All New Tankers

Ninety-five percent of all the salinity indicator equipment for the new tanker construction program will be manufactured by Pilot Marine Corporation, 29 Broadway, New York City.

This equipment will contain the latest design features for boiler feed-water protection, and in most cases will also be installed on the ships' evaporator plants.

Pilot Marine salinity indicators offer exclusively the feature of automatic temperature compensation. Regardless of boiler feed-water temperature, accurate salinity readings are obtained automatically. Pilot Marine products are sold and serviced by: Jacksonville Yacht Storage, Jacksonville, Florida; Marine Specialty Co., Mobile, Ala.; Mississippi Valley Electric Co., New Orleans, La.; MacIntosh Electric Supply Co., Beaumont, Texas; Intercoastal Electric Co., Houston, Texas; Owesen and Co., San Diego, Calif.; Toumey Electric & Engineering Co., San Francisco, Calif.; Pacific Marine Supply, Seattle, Wash.

Pilot Marine also manufactures electric ship's telegraphs, electric water tight door controls, sound powered telephones, rudder angle indicators, power failure alarms.

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Westinghouse Installs Radar On Eight Foreign Ships

Westinghouse International Company is equipping a fleet of eight 5000-ton C1-M-AV1 steam cargo ships with Westinghouse, Type MU, 3.2 cm radar units. These ships are owned and operated by Flota Mercante Grancolombiana, a company representing the combined shipping interests of Colombia, Venezuela, and Ecuador, and each ship is installed with the radar when it comes into New York harbor. Installations have been completed in the normal turnaround time of three or four days.

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Seaside Supply Stores Enlarges Warehouse Space

Seaside Supply Stores, Inc., 803 South Palos Verdes Street, San Pedro, Cal., have increased their warehouse space by acquiring a building on the same street adjoining the San Pedro Elks' Club. The firm now has three warehouses in the San Pedro area and one at Harbor City. Einar Richter, vice president and sales manager of Seaside Supply, recently returned from a business trip to Europe, and reports shipyards there, particularly in the Scandinavian countries, busy working on new vessels. Big tankers are being built in Norway.

Danish Vessels Install Navigation Aids At Port of L.A.

Radiomarine radar sets and Sperry gyroscopes were installed this year on the Danish motor vessels INDIA and ERRIA when they called at Long Beach, California. These vessels are in the globe-girdling cargo and passenger fleet of The East Asiatic Company, Copenhagen. Transmarine Navigation Company is agent for this line in southern California. Craig Shipbuilding Company, Long Beach, rebuilt the wheelhouses on the vessels for the new navigation instruments. A radar antenna mast was installed on the ERRIA, but the antenna on the INDIA went on the ship's foremast.

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McCamon Joins Nordberg As Diesel Sales Engineer

R. W. Bayerlein, vice president, Heavy Machinery Division, Nordberg Mfg. Co., Milwaukee, Wisconsin, recently announced the appointment of W. W. McCamon as sales engineer for both the marine and stationary Diesel engines.

Mr. McCamon received his introduction to the Diesel engine field with Hudson Bay Company's first trading activity in the western Arctic 25 years ago. In 1924 he joined Atlas Imperial Diesel Engine Co. where he did testing, erecting and field service work on marine and excavating machinery engines. He left Atlas Imperial in 1931 and rejoined that company in 1943 as central division manager with offices in Chicago. He was in charge of stationary, industrial, marine and manufacturer installations.

NORDBERG MFG. CO., appoint W. W. McCAMON Sales Engineer for both the marine and stationary Diesel engines.

Between 1931 and 1943 McCamon did sales engineering work in the food processing and refrigeration industries and taught Diesel engine courses for the U. S. Navy. He saw active service in the Canadian Army.

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Calmo Engineering Build New Office and Warehouses

The Calmo Engineering Company, one of southern California's oldest distributors of high grade fire brick, has recently moved into a new home. The new warehouses and office were built at 1500 Esperanza Street, near the center of the Los Angeles industrial section.

The word "Calmo" is a combination of California and Missouri—for this company has been distributing California fire brick and Missouri fire brick since it started in business in 1923.

In a quarter of a century many changes have come in the refractory field. In those early years only a limited number and types of fire brick were needed for the then-existing needs of California's young and growing shipping industry and industrial plants. A small stock of "local" fire brick and "Eastern" brick was ample.

Today it is different. Great harbors have been developed—with ships coming and going to ports all over the world. Great—and small—industrial plants have dotted the landscape. All these mean boilers and furnaces of many types. And these require many types and qualities of refractory products—from the lower qualities on through the super duty and high alumina products, in addition to high temperature bonding mortars, castable refractories, plastic fire brick, insulating fire brick, and high temperature insulations. Twenty-five years ago a dozen items was a fair stock. The company reports that today more than five hundred items are available at all times in the Calmo warehouses.

Today, as when the company started, the principal line is the A. P. Green Fire Brick Co., of Mexico, Missouri. The Calmo Engineering Company forms the southern California link of the chain of A. P. Green distributors found in all major ports around the United States. Calmo is also southern California distributor for the Norton Company (Refractories Division) of Worchester, Massachusetts, and for California made fire brick.

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General Engineering Completes Tanker Reconversion

General Engineering & Dry Dock Company, San Francisco, recently completed work on the former United States Navy "turtle back" Diesel tanker GUALALA and is finishing up a similar job on a sister craft, the former mv KLASKININE for the Brazilian Aeronautical Commission. These vessels are of the AOG class and the first has been renamed the RIJO and the second the RAZA.

The work was done at the General yard in Alameda and consisted mainly of reconverting the ships from war to peace, rearranging the accommodations, installing new navigation instruments and overhauling the machinery.

Each vessel is powered by a Fairbanks-Morse 16 x 20, Model 37, 5-cylinder, 875 hp Diesel engine. New commercial type Raytheon 10-centimeter radar sets, Submarine Signal Fathometers and Radiomarine Corporation direction finders and emergency radio transmitters went aboard each.

Electrical installation work on the RIJO was done by Marine Electric Company and on the RAZA by Republic Electric Company, both of San Francisco.

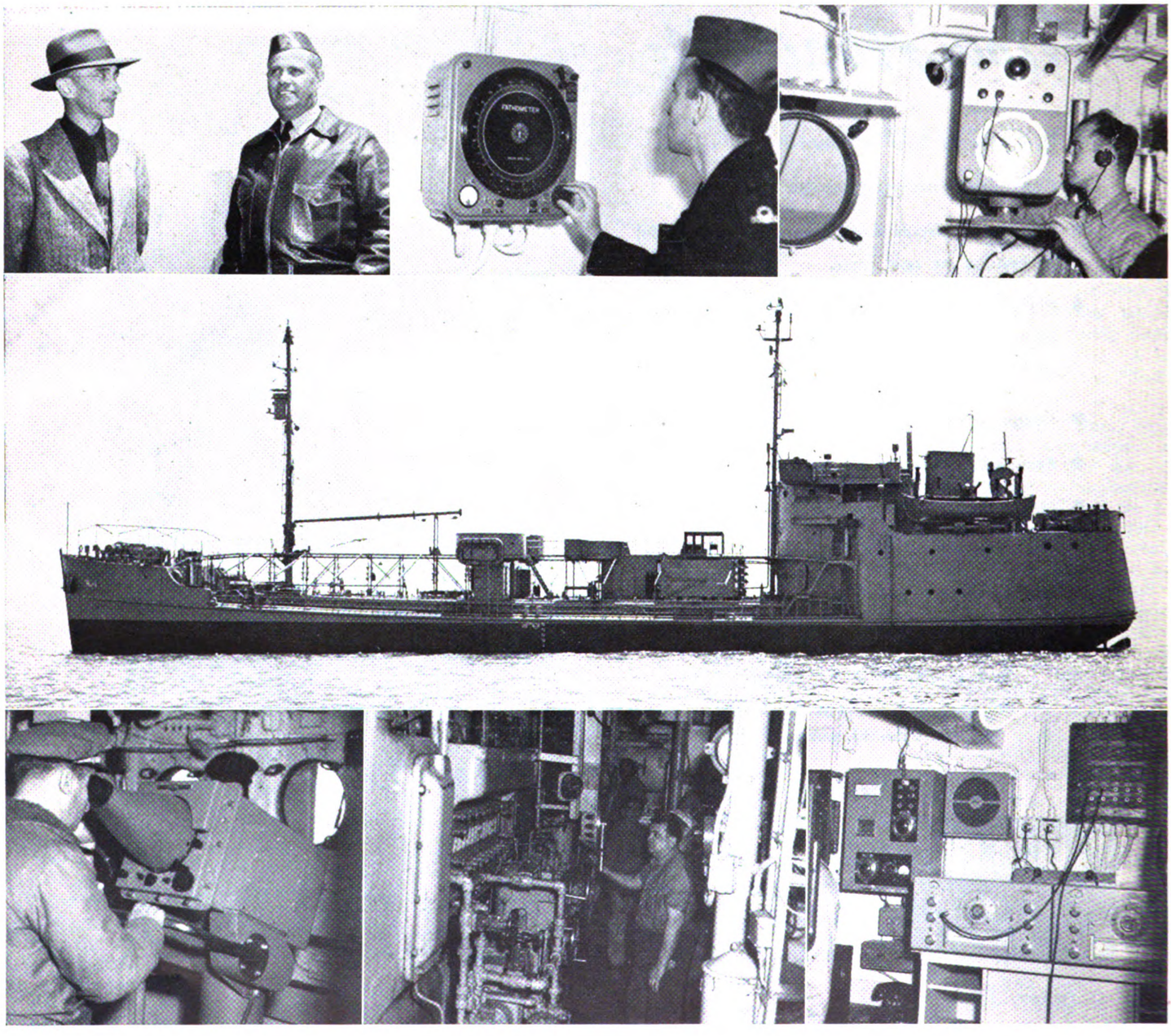
Crews from the Brazilian Navy were flown to the United States to man these vessels and, while awaiting their return to South America, were given special training in fire-fighting and damage control by the United States Navy at Treasure Island, San Francisco. Lieutenant Commander Roberto Nunes is Captain of the RIJO, and Lieutenant Commander Mario Braja commands the RAZA.

The vessels, including the price of each and the rebuilding, cost the Brazilian government approximately $500,000 each. They will be used to distribute gasoline and other petroleum products to Brazilian air bases.

Dimensions of this AOG class tanker are: length 221 feet, overall; breadth, 37 feet, draft 14 feet, 6 inches, and their cargo tank capacity is 534,000 gallons. They are 1,134 gross tons.

GENERAL ENGINEERING CONVERTS NAVY TANKERS FOR THE BRAZILIAN AERONAUTICAL COMMISSION . . . Aboard the RIJO—top row, left to right: P. R. MESQUITA, Secretary of General Engineering Co., and COLONEL ANTONIO PROENGA, Brazilian Air Force and representative of the Brazilian Purchasing Commission; LT. (jg.) FERNANDO PORTO, Gunnery Officer at the Submarine Signal Fathometer indicator which registers in both feet and knots; JAMES GOOCH of the Radiomarine Corporation checking the RCA direction finder.

Center—the RIJO. Bottom row, left to right: LT. COMDR. ROBERTO NUNES, Brazilian Navy, Master of the RIJO at the Raytheon radar—in the background is a Liquidometer rudder angle indicator; main power plant is 5-cylinder 875 hp. Fairbanks-Morse Diesel engine; the radio room with the RCA emergency transmitter at the left, on the right are National receivers.



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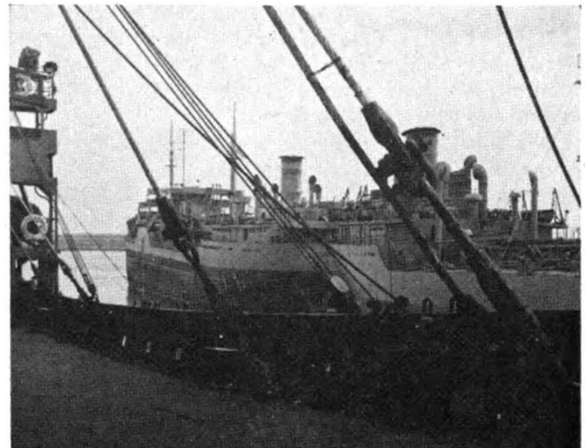

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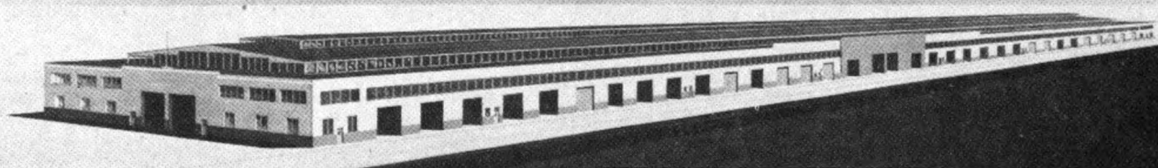

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Duo-Safety Ladder Especially Adaptable for Marine Use

The Duo-Safety Ladder Corporation, Oshkosh, Wisconsin recently announced the production of two new aluminum-alloy step ladders, according to E. J. Arps, president of the firm.

Designated as the type ALB and the type ALC the two ladders are identical in construction with the exception that

a platform is not included in the ALC model.

The aluminum construction, claims the manufacturer, makes the new ladders adaptable to general industry and especially for marine work since the moisture-resistant aluminum gives a lifetime of decay-free service.

According to the company the main features include: the advantages of the strength and lightness of aluminum; the strongly reinforced back braces; the angle-braced, reinforced steps; and the non-slipping rubber shoes.

Additional information can be obtained by writing Duo-Safety Ladder Corporation, 809 Ninth Street, Oshkosh, Wisconsin.

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G. E. Earnings

(Continued from page 29)

duced, and do it through getting its efficiency *up* just as fast as possible. That's the way to get the greatest possible output at low costs that will protect the high volume. That's the way to provide the greatest number of steady jobs, and do it while still employing in fixed facilities the least amount of goods and services that could otherwise go on through to the public in consumer goods.

"To some it seems a virtue to have a low return on investment, whereas just the opposite is true where the high return is accomplished through such savings and competitive skills as were previously indicated."

An accompanying chart shows the high proportion of earnings the General Electric stockholders are currently having to leave in the business. To quote again:

"Our stockholders are thus currently involved in the soundest sort of inflation-arresting action. They are receiving for personal use only 3c of their earnings and are saving 4c *from* consumption and *for* investment in expanded and improved equipment to provide more jobs and to turn out more goods to help meet the needs of the country and to aid in keeping prices down."

Get a copy and study the simple facts given for they provide a five-minute education in what big American industry is doing for the welfare of the country.

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Long Beach Marine Repair Complete Speedy Repair Job

Long Beach Marine Repair Company, Long Beach, California, recently demonstrated an economical and speedy method of replacing the stem of a tuna clipper. The 100 foot clipper WESTERN PACIFIC, was damaged in a collision and workmen under the direction of repair superintendent, Dave Maxwell, spread the planking and dropped in the new stem. According to the company this operation completed a major repair in the time it usually takes for a less serious repair job.

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Kinder of Walter Kidde Tours Pacific Coast

On a combined business and pleasure trip, Ralph Kinder, export manager, Walter Kidde Company, was a visitor on the Pacific Coast with Mrs. Kinder. At Seattle he visited with James C. Gow, president, Alexander Gow, Inc., Kidde representatives in Oregon and Washington; and with Joshua Green, pioneer banker and shipping man of Seattle, uncle of Mrs. Kinder.

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Southern California offices and warehouse of the Frank Groves Company have been moved from 111 West C Street, Wilmington, to 520 North Avalon Boulevard in the same city, occupying the building recently vacated by Duke's Packing Company, which moved to 314 Wilmington Boulevard.

Rolston Handles Southwestern Sales for Dearborn Chemical

Dearborn Chemical Company, Chicago, Illinois, has recently assigned to F. E. Rolston the territory of Louisiana, Arkansas and part of eastern Texas. He will be in charge of the sale of all Dearborn products and will be temporarily located at the Shreveport office.

In 1945 Mr. Rolston joined the staff of Dearborn as a packaging engineer and according to the company he is considered an authority on the development of specialized, moisture-proof packaging. From 1942 to 1945 he served the government as an industrial specialist, working under the Forest Products Laboratories. Assigned to the Chief of Ordnance office, he was head of the Spare Parts and Packaging Branch of the Engineering and Manufacturing Division.

Before specializing in wrapping and packaging, Mr. Rolston was associated with the Chicago Mill and Lumber Company and was president of the Rolston Engineering Company.

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U.S. Steel Purchases Consolidated Plants

It was announced recently that The United States Steel Corp., has completed the purchase of Consolidated Steel Corp., of Texas and its parent company, the Consolidated Western Steel Corp., of California.

The two new subsidiaries of United States Steel made the purchase.

Alden G. Roach will continue as president of the two companies, according to Benjamin F. Fairless, United States Steel president and H. C. Cranfill will continue as vice president and general manager of the Texas firm.

TESTING Quaker Pacific Rubber Company's new Qua-Flex fire hose at the municipal Corporation Yard at San Francisco. Left to right: E. A. RAINS, hose tester at the yard; LARRY S. PRYOR, Los Angeles manager of Quaker-Pacific, and MAX MOORE, executive vice president of the company. Qua-Flex is the only cotton rubber-lined fire hose manufactured in 75-ft. lengths that will fit and fold into a conventional unlined linen fire hose rack. It has a test pressure of 300 lbs. but, in the actual tests, one 50-ft. length stood a 385-lb. pressure before bursting, with no slipping or shifting of the couplings and no evidence of leakage.

Duke's Packing Company, Wilmington, California, has moved to the new and larger quarters, shown in the accompanying picture, at 314 Wilmington Boulevard, telephone TErminal 4-1447. R. H. (Ronnie) MERCEREAU, managing owner, says the move was necessitated by growth in his marine business.

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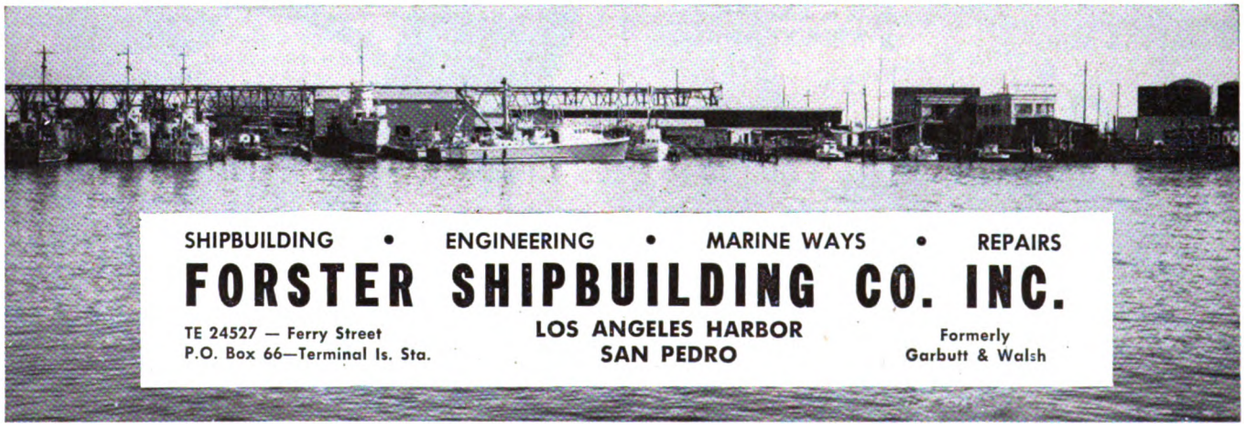

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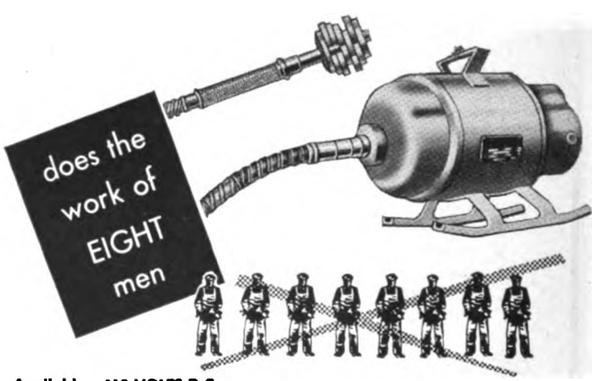

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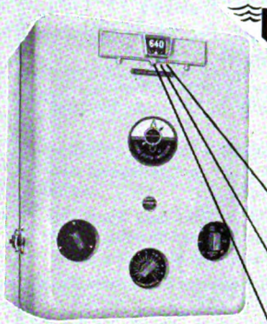

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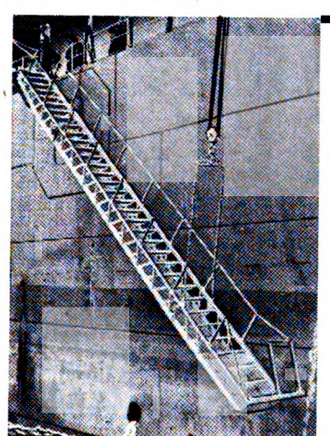

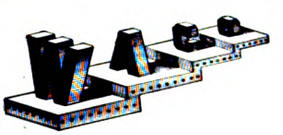

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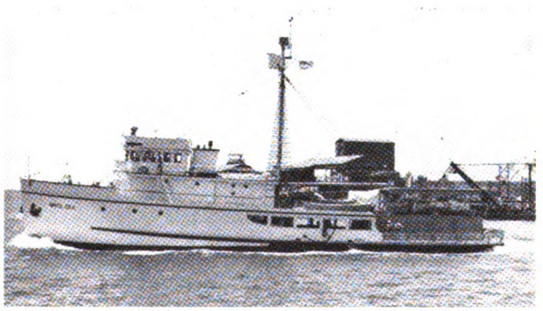

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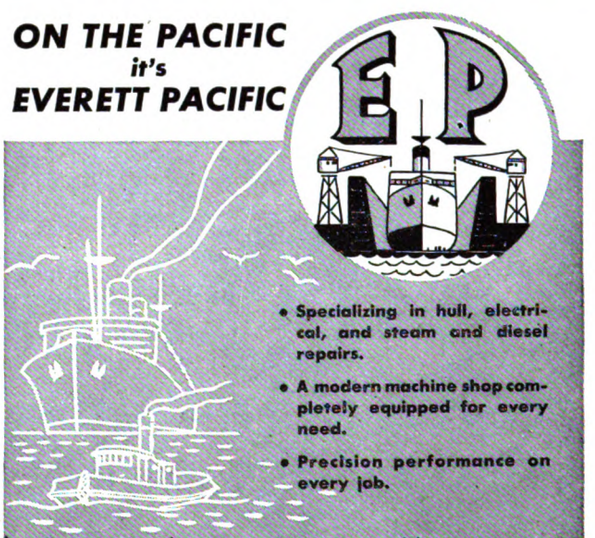

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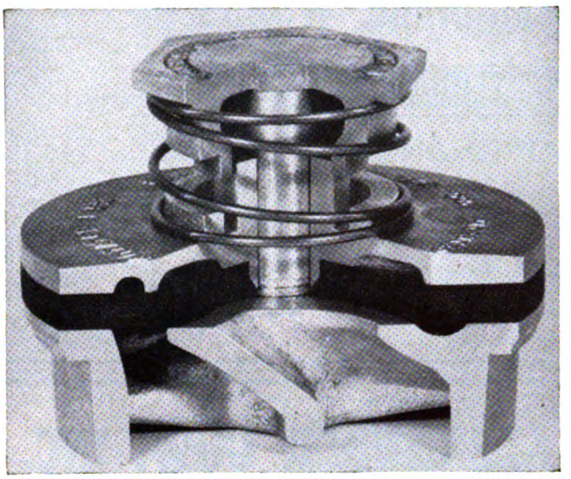

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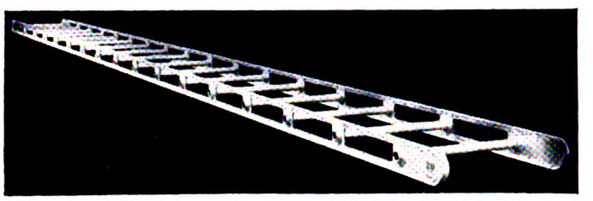

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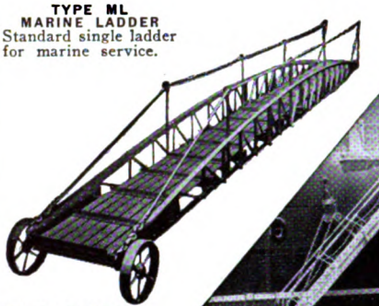

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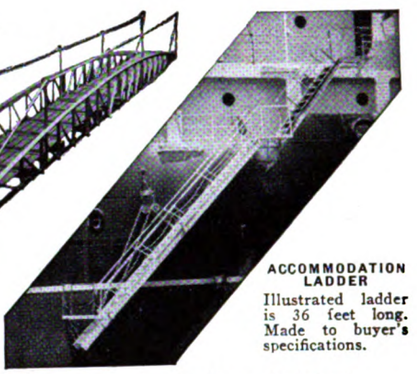

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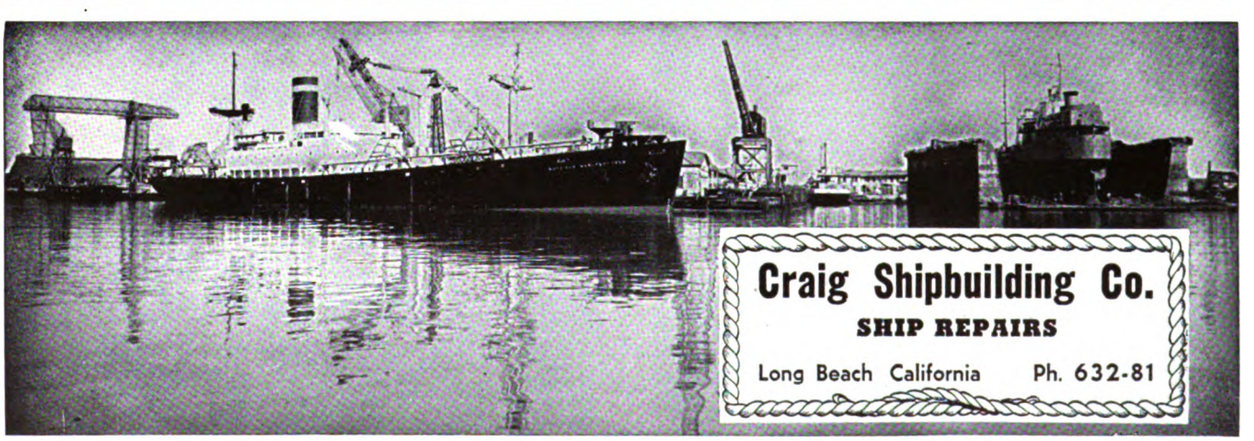

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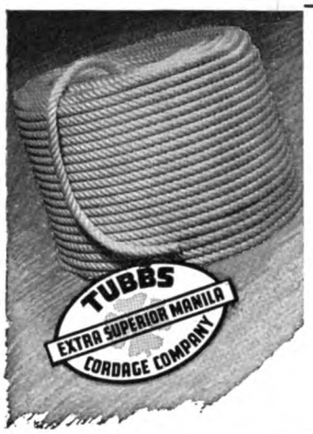

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ADVERTISERS INDEX

Aerial Products, Inc. 14
Albina Engine & Machine Works 57
Alcoa Steamship Company, Inc. 10
Allen Pacific Co., Inc., Robert G. 70
Aluminum Company of America 15
Aluminum Ladder Co. 67
American Brass Co. 13
American Export Lines 62
American Mail Line 65
Arnessen Electric Co. 62
Atlas Paint & Varnish Co. 51
Babcock & Wilcox Co., The 21
Baier & Associates, L. S. 72
Baker Dock Co. 71
Bethlehem Steel Co. 19
Bird-Archer Co. of California 70
Bludworth Marine 63
Boland Machine & Manufacturing Co. 70
Bratsberg, Capt. A. J. H. 72
Carrier Corp. 23
Catalina Island Steamship Line 70
Cavanaugh Machine Works 67
Chubb & Son 53
Columbia Machine Works 69
Combustion Engineering Co., Inc. 12
Commercial Ship Repair 16
Condenser Service & Engineering Co., Inc. 28
Consolidated Services, Inc. 62
Cordes Bros. 70
Costello Supply Co., J. M. 71
Craig Shipbuilding Co. 67
Curtis Bay Towing Co., The 8
Dearborn Chemical Co. 71
De Laval Steam Turbine Co., The (IMO Pump Div'n) 66
Dravis Engineering & Machine Works 68
Drew & Co., Inc., E. F. 1
Duke's Packing Co. 61
Duo-Safety Ladder Corp. 59
Everett Pacific Shipbuilding & Dry Dock Co. 65
Ferran & Co., Inc., Charles 61
Forster Shipbuilding Co., Inc. 61
General Engineering & Dry Dock Corp. 64
Gibson, D. M. 54
Gigy & Associates, M. J. 70
Gladding, McBean & Co. 71
Gow, Inc., Alexander 68
Great Western Cordage Co. 63
Griffiths & Sprague Stevedoring Co. 66
Hagan Corp. 42
Hanson, H. C. 72
Harbor Supply Co. 55
Hart & Burns, Inc. 57
Hendry Co., C. J. 7
Hiller, Paul W. 71
Horton Agency, Lou E. 72
International Nickel Co. 17
Isherwood & Co., Ltd., Sir Joseph W. 72
Jeans, Capt. Harvey A. 72
Kearfott Co., Inc. 70
Long Beach Marine Repair Co. 65
Long Beach, Port of 59
Luce & Co. 51
Lykes Bros. Steamship Co., Inc. 64
Marble, Advertising, Ross C. 62
Marden & Hagist 66
Marine Electric Co. (Portland) 65
Marine Electric Co., (San Francisco) 68
Marine & Industrial Supplies & Service, Inc. ..... 49 & 71
Marine & Industrial Supply, Inc. 72
Metropolitan Plumbing Supply Co. 68
Moore & Co., Engineers, C. C. 21
Moore-McCormack Lines 47
Morrison & Bevilockway 69
National Malleable & Steel Castings Co. 2
Nickum & Sons, W. C. 72
Nordberg Manufacturing Co. ..... Front Cover & 3
Nystrom, Capt. E. W. 72
O'Donnell Copper Works, E. M. 71
Oxi Corp. 18
Pacific Marine Refrigeration Co. 69
Pacific Marine Supply Co. 69
Perry, L. C. 72
Propeller Club of the United States, The 6
Puget Sound Bridge & Dredging Co. 71
Puget Sound Freight Lines 70
Raytheon Manufacturing Co. 25
Refractory Coatings Co. 69
Rober Co., W. H. 69
Roebling's Sons Co., John A. 11
Ross Heater & Manufacturing Co., Inc. 47
Rothschild International Stevedoring Co. 71
Seaboard Machinery Corp. ..... Inside Back Cover
Seattle Marine Surveyors 72
Seattle, Port of 54
Solby, Battersby & Co., Inc. 64
Shell Oil Co., Inc. 5
Sheritt & Headman, Inc. 68
Sims Pump Valve Co., Inc. 67
Socony-Vacuum Oil Co., Inc. ..... Inside Front Cover
Sopac Ship Maintenance Co. 50
Standard Distributing Co. 49
Standard Oil Co. of California 9
Sumco Products, Inc. 27
Swett & Co., George E. 63
Texas Coast Shipyards 59
The Texas Co. ..... Outside Back Cover
Thompson Co., J. Paul 72
Thorpe & Son, Inc., J. T. 72
Todd Shipyards Corp., Combustion Equipment Div'n. 68
Trenko, William D. 66
Tubbs Cordage Co. 69
United Fruit Co. 4
Washington Aluminum Co., Inc. 63
Weeks-Howe-Emerson Co. 69
Welin Davit & Boat 41
Western Asbestos Co. 64
Western Machinery Corp. 71
Whittelsey, H. Newton, Naval Architects 72
Woodlawn Flower Shop 71

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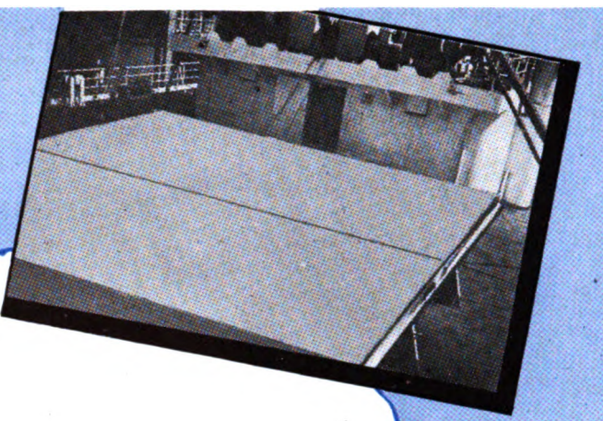

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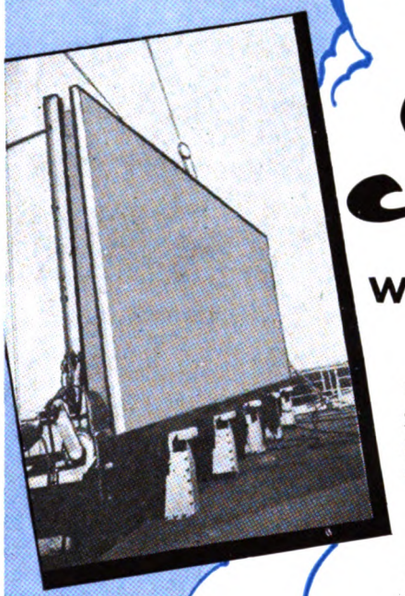

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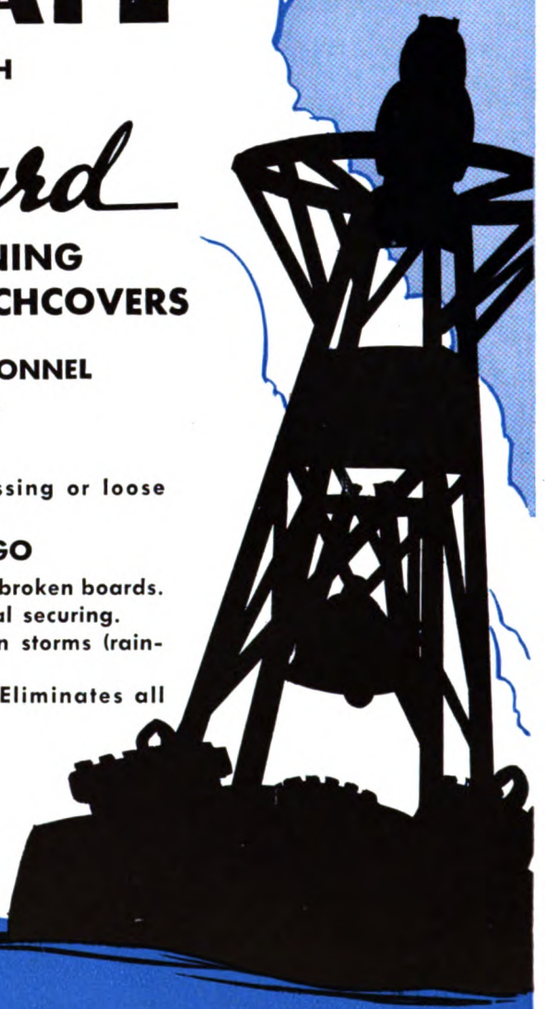

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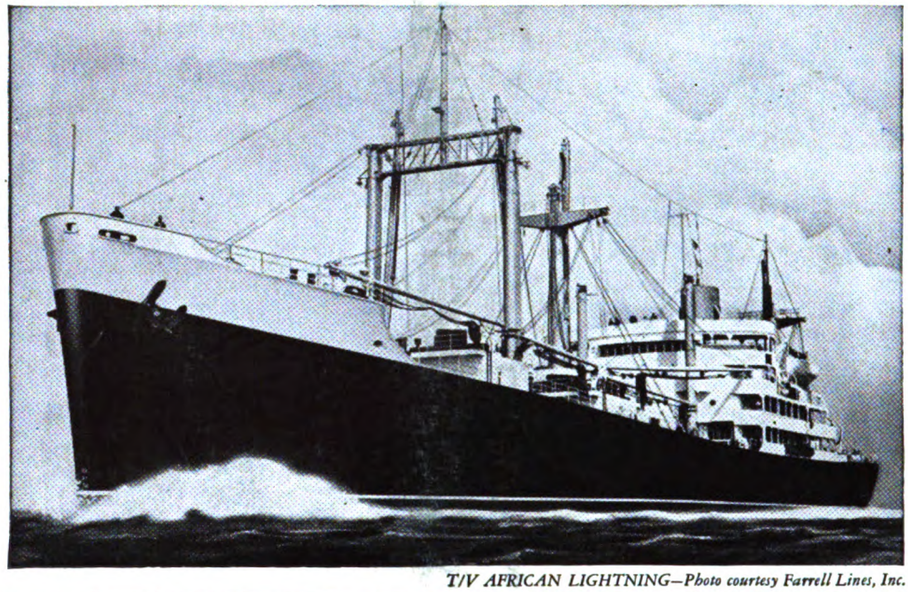

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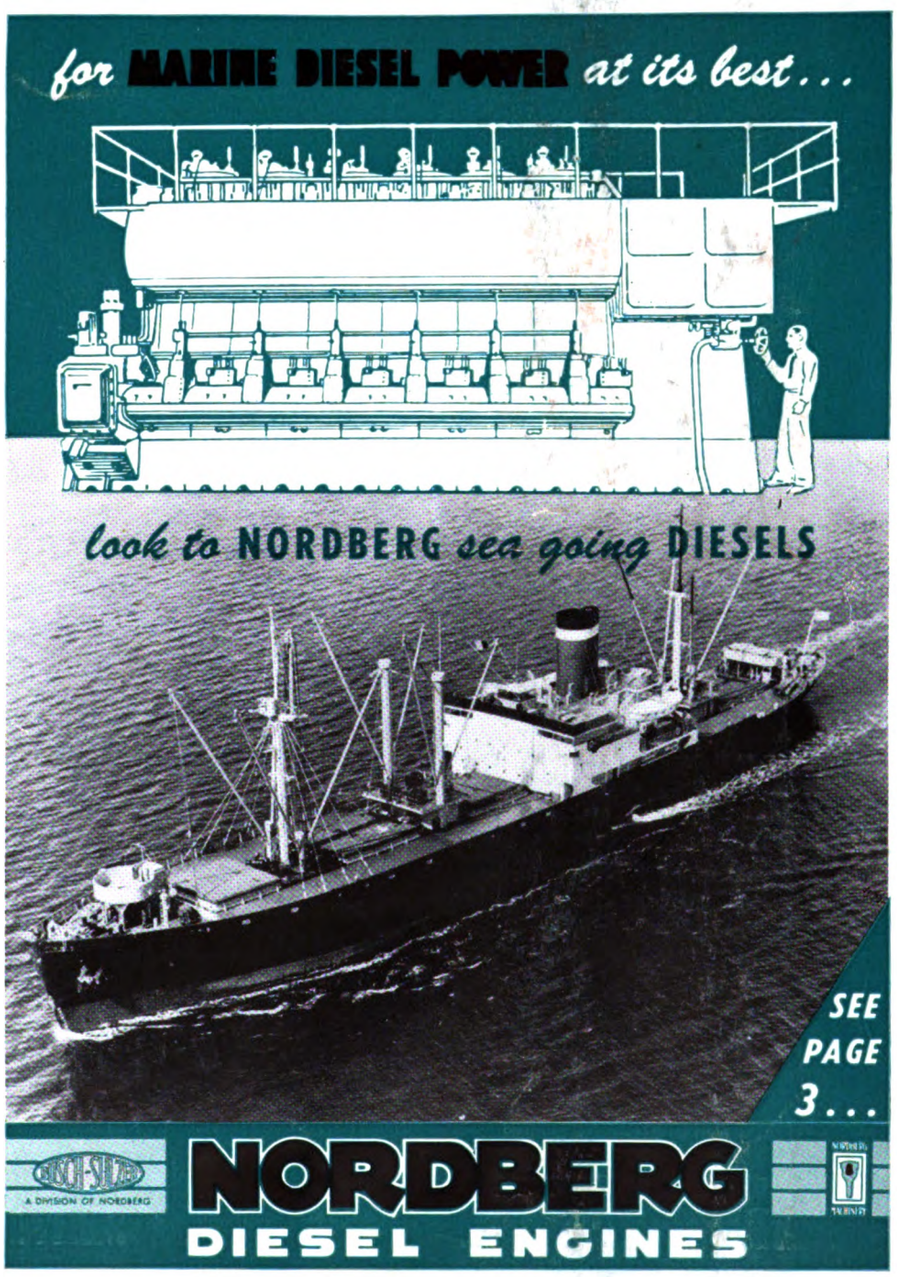

NOVEMBER 1948
Volume 43 • Number 12

EDITORIAL INDEX ON PAGE.....29
ADVERTISERS' INDEX ON PAGE 72

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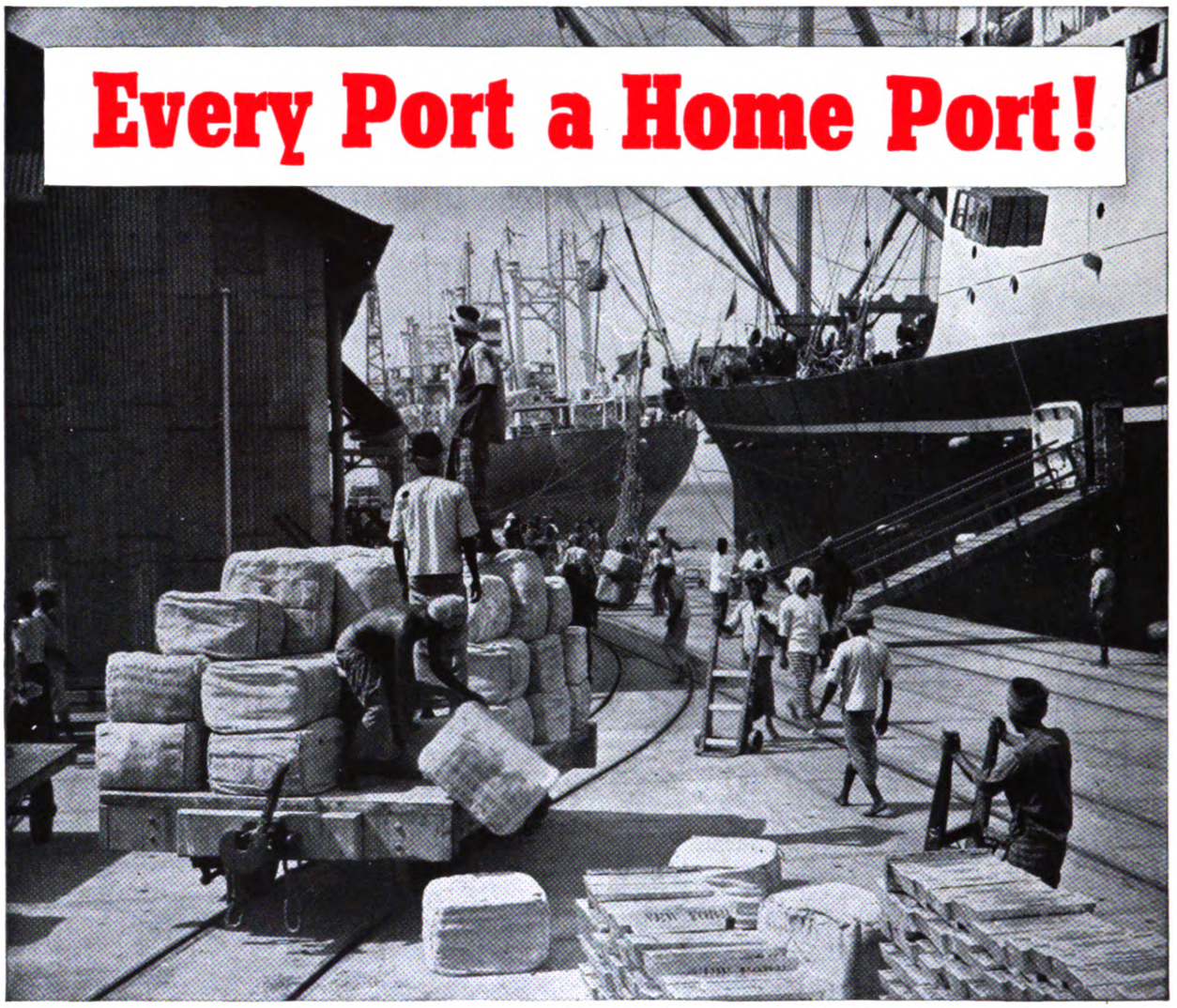

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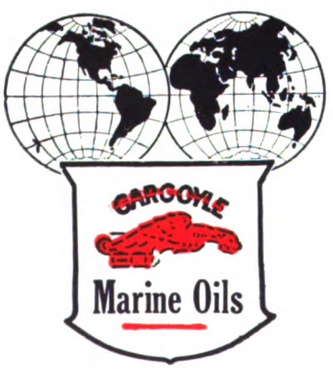

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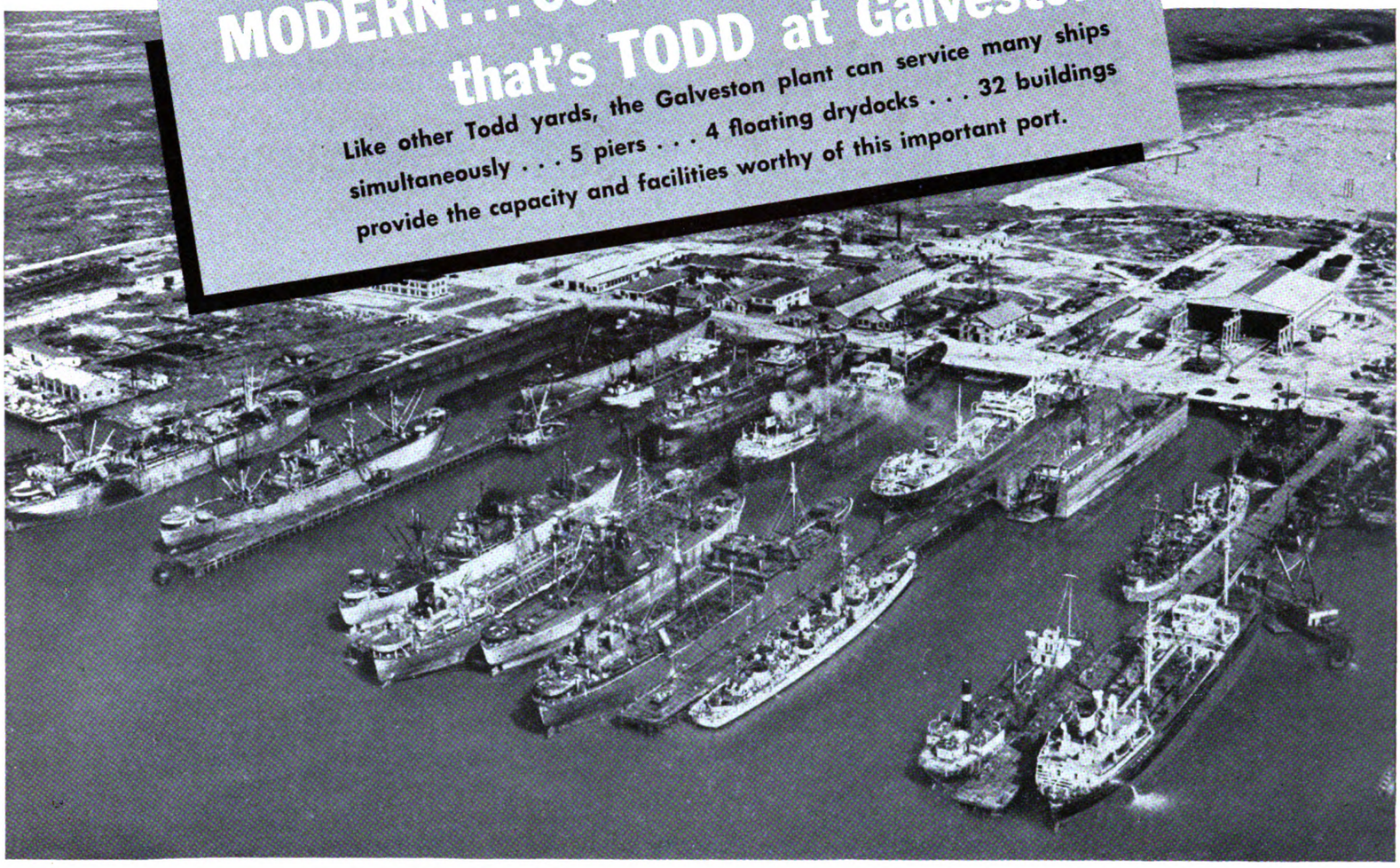

• View of Todd's 61-acre plant at Pelican Island, close to all Galveston wharves.

A RING of shipyards, girdling America's coastlines on the Atlantic, Pacific and Gulf, enables Todd to provide expert service in repair, maintenance and conversion of ships of all sizes and types. Highly developed facilities effect major economies for operators in both time and money. Naval architects, marine engineers and other specialists are ready to go to work for you immediately — either independently or in cooperation with your own consultants. Shop equipment of the most modern type permits the application of up-to-date engineering techniques in all work.

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Starting nearly half a century ago to sail to Caribbean ports for tropical fruits, the ships of the Great White Fleet began to serve the mutually beneficial trade between Middle and North America.

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Harbinger of all this was the first white ship that sailed so long ago . . . and of much more, too . . . of the growing understanding and friendship between the Americas. The day by day contacts of thousands of individuals form the foundation of the practical Good Neighbor Policy.

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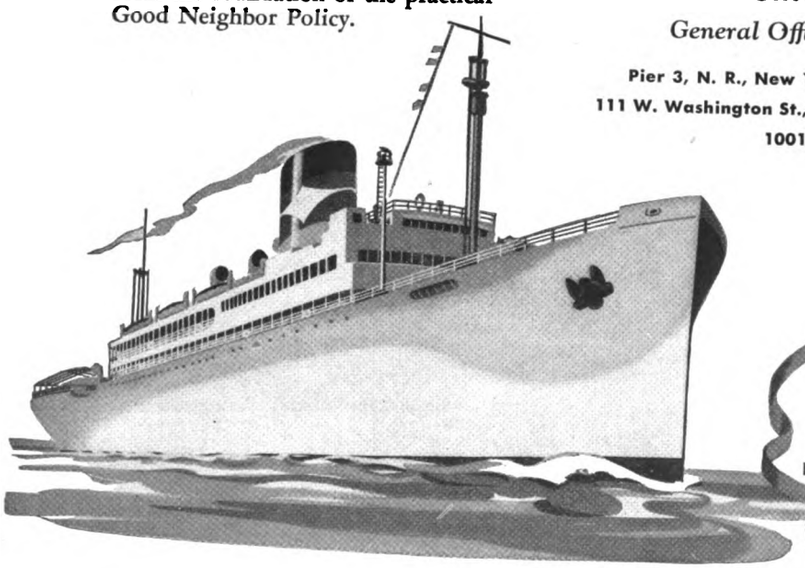

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why "Drag Anchor"

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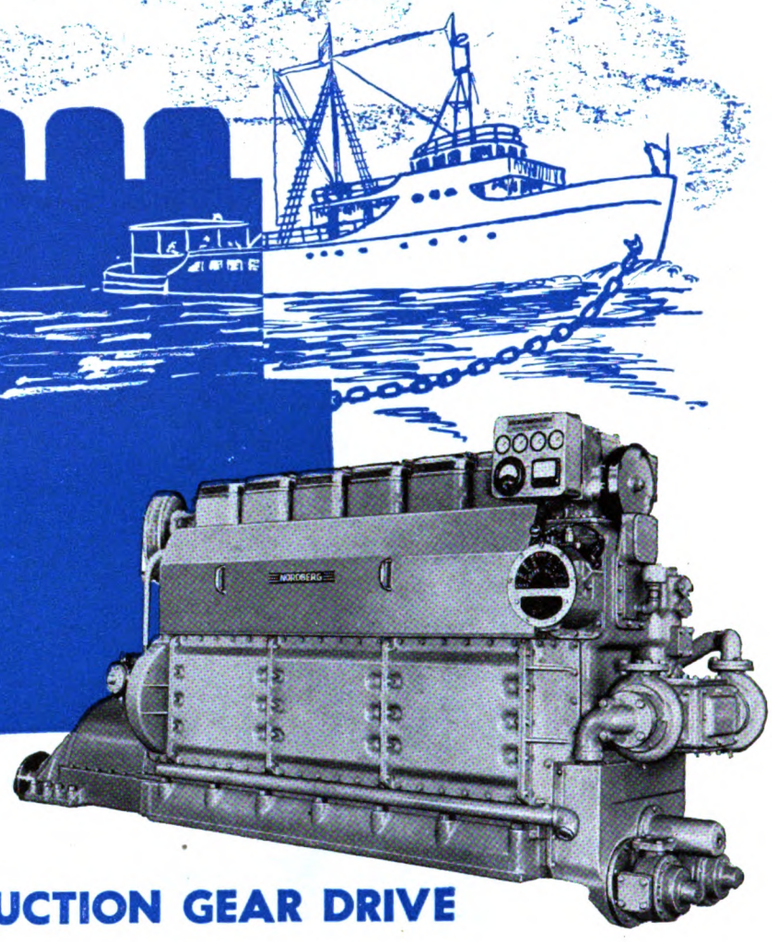

NORDBERG DIESELS with REDUCTION GEAR DRIVE

give you MORE POWER with less weight — less space

How much power does your engine waste pushing *itself* around? In the case of large, heavy, slow-speed direct-drive propulsion engines, chances are that you're paying for a much higher ratio of power to weight than is necessary for efficient operation.

In comparison, a 4-cycle Nordberg heavy-duty Marine Diesel, through Reduction Gears, will deliver the *same* shaft horsepower and shaft r.p.m., yet with a very appreciable reduction in over-all engine size and weight.

Obviously, this space and weight saving can be used to increase your cruising radius by increasing fuel tank capacity . . . to increase hold capacity for bigger pay loads . . . or a combination of both.

In addition, Nordberg Marine Diesels offer a combination of advanced engineering and performance features that make them the logical choice wherever dependable main propulsion and auxiliary marine power are needed.

Nordberg 4-cycle Diesels are built in 6, 7, and 8-cylinder models, in 9" x 11½" and 13" x 16½" sizes — supercharged and non-supercharged, from 265 to 1350 H.P. Available with dependable Reduction Gears in ratios of 2:1 and 2.5:1. Write for descriptive literature.

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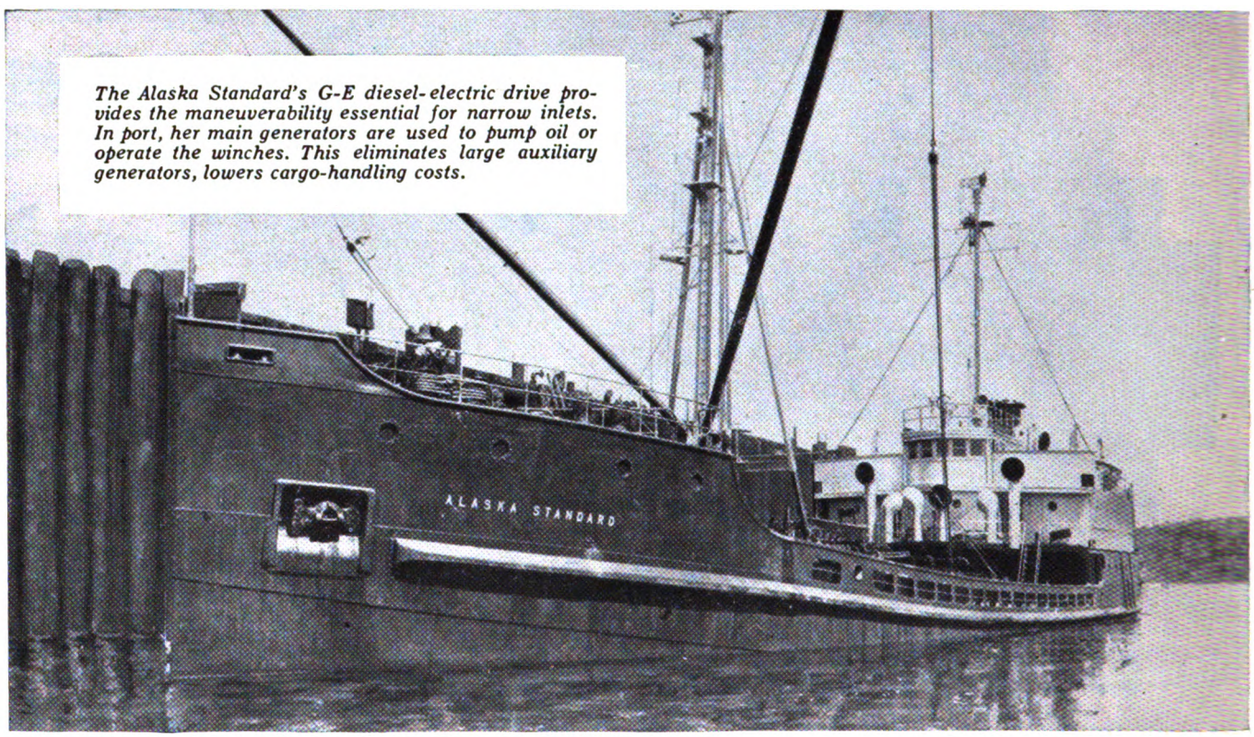
G-E PROPULSION DRIVE DOES "MILLION-MILE



The Alaska Standard's G-E diesel-electric drive provides the maneuverability essential for narrow inlets. In port, her main generators are used to pump oil or operate the winches. This eliminates large auxiliary generators, lowers cargo-handling costs.

PROPULSION DRIVES

DIESEL-ELECTRIC TURBINE-ELECTRIC
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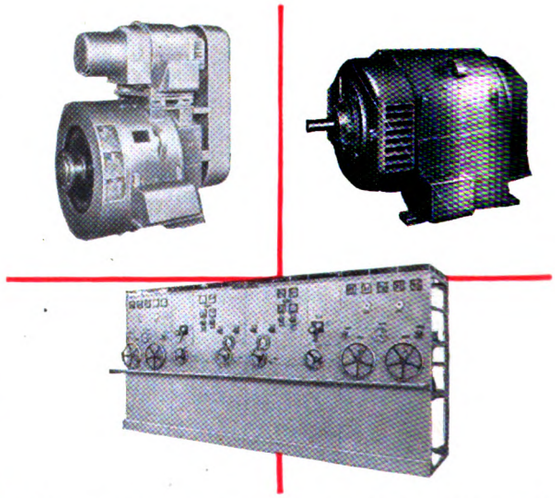
MARINE AUXILIARIES

and **KEEP 'EM SAILING SERVICE**



DIESEL-ELECTRIC DRIVE NEEDS ONLY 3 BASIC ELECTRICAL UNITS: *a diesel-driven generator, a propulsion motor, and a control unit. Operation is easy. Full control is readily obtained either from the pilothouse or the engine room.*

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IN SERVICE 24 YEARS; JOB WITHOUT REPAIRS

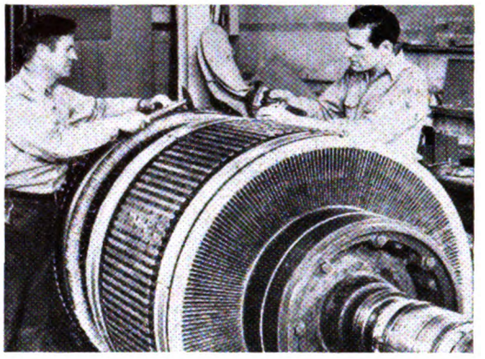
Diesel-electric equipment on tanker MS *Alaska Standard* gives extra-long, dependable service before getting its first major overhaul in G-E service shop.

A fine example of the trouble-free durability of G-E marine propulsion drives is the case of the 210-foot tanker MS *Alaska Standard*. For 24 years this "floating bulk plant" has supplied petroleum products to fishermen, fur trappers, and storekeepers along the southeastern Alaska coast. Although it has logged close to a million miles, not once have major repairs been needed on her G-E diesel-electric drive!

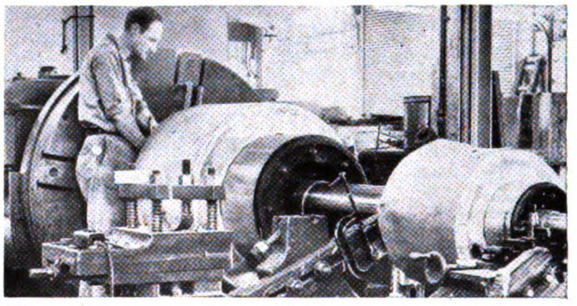
In addition to long service life, this modern, economical drive provides its operators with flexibility of control for fast, accurate maneuvering in narrow inlets and small coves. Optional location of the drive equipment permits arranging the machinery most efficiently, makes maximum cargo space available for pay loads. Moreover, with diesel-electric drive, the main propulsion generators are also used to drive the cargo-pumping machinery, eliminating the cost of large auxiliary generators. Simplicity of operation from pilothouse and maximum power over a wide speed range, are other advantages.

Recently the tanker's two G-E 245-kw d-c generators and two G-E 300-hp motors were sent to G-E's San Francisco service shop to undergo their first complete reconditioning. Now, as good as new again, they're back on the job, ready for many more years of service.

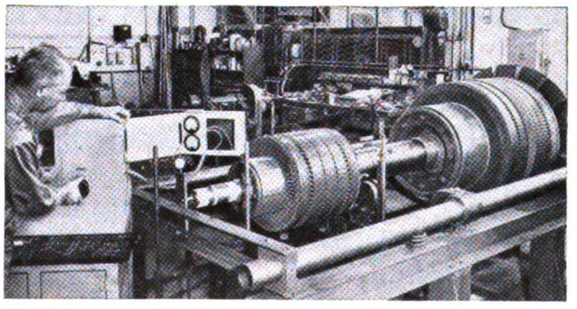
To match your needs for equipment and service, G-E's complete 3-way program includes: modern propulsion drives, marine auxiliaries, and Keep 'em Sailing Service to speed ship repairs and turn-arounds, save port time. A G-E marine engineer will gladly show you in detail how you can profit from this program.



In G-E service shop, the tanker's electric drive gets a complete reconditioning—first in 24 years. Operators are making armature connections at back ends of the two 300-hp rotors.



Here a 60-inch Niles lathe is being set up to turn and grind the commutators for generator and exciter. Electrical equipment was also modified for added horsepower, increasing speed from 265 to 315 rpm.



Combined generator and exciter armatures are shown being dynamically balanced as a unit. This G-E shop is one of a chain of 20 which service major coast and inland ports.

GENERAL ELECTRIC

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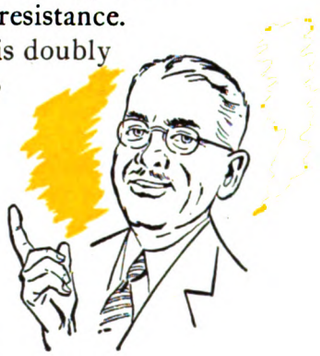
to help extend the running time of turbines

Weak oils can cut down turbine efficiency

Likely you've seen what happens—how ordinary oils oxidize, break down into sludge, "gum up the works" —even cause rust. Result: shorter running time and higher operating costs.

Shell's answer: a doubly fortified lubricant

Shell Research specifically developed an oil for turbine use—Shell Turbo Oil. To build this oil, Shell selects only crude stocks naturally high in oxidation stability—sludge resistance. Then, with Shell-developed additives, Shell Turbo Oil is doubly fortified. Once to build up its naturally high resistance to oxidation. Again to assure exceptional rust-preventing quality.



What you as a Shell Turbo user can expect

Little or no trace of sludge, no rust, no breakdown in the oil. In fact, Shell Turbo Oil has been delivering exactly that kind of lubrication performance in all types of installations—and always to the end of extending the running time of turbines.

SHELL

ARE YOU ABSOLUTELY SURE YOU ARE GETTING ALL THAT'S NEW IN LUBRICATION?

Your Shell Lubrication Engineer can make a complete study and analysis of your plant and machines... give you engineering counsel, advice on new lubricants and their application... help you set up schedules and controls for each and every machine. For that kind of service, call in your Shell Lubrication Engineer.

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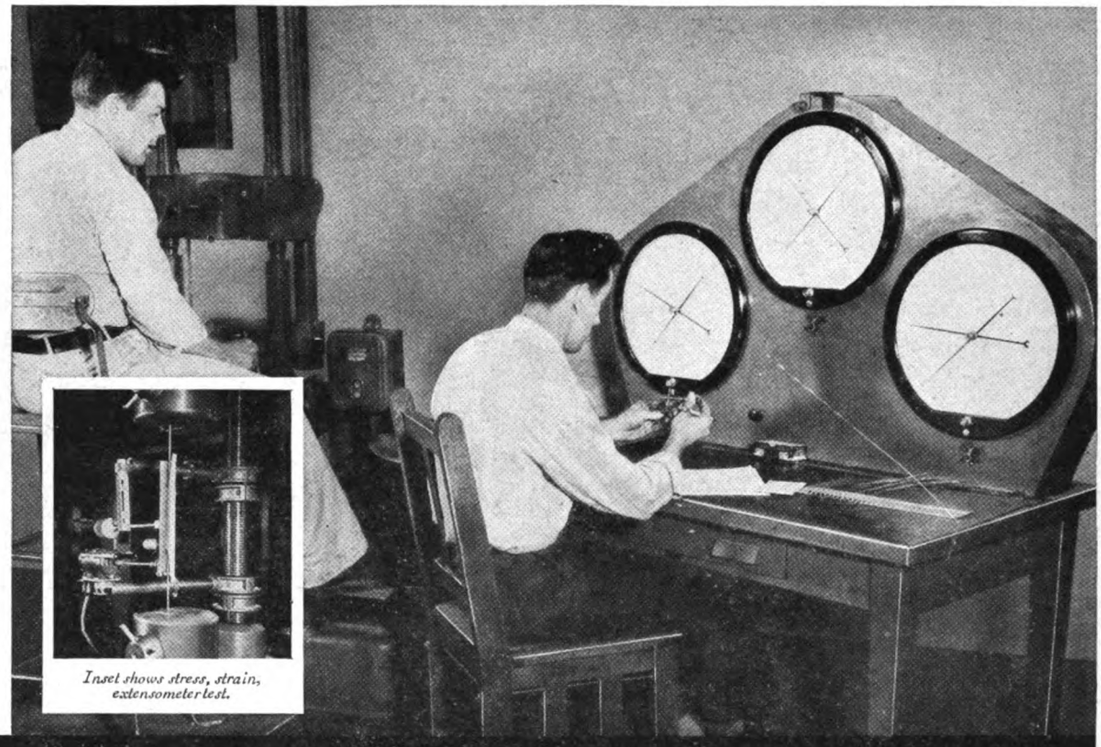

Inset shows stress, strain, extensometer test.

How to Measure the Muscle in Rope Wire

Measuring the muscle—or tensile strength—of rope is one of many important tests used in grading Wickwire Rope. And the engineers who supervise these tests are tough taskmasters.

Before they release a single coil of wire to the Rope Mill, they take two samples from each end of every coil. These samples are gauged for size and roundness. Then the wire is subjected to the extensometer test, the tensile, torsion and elongation tests. Tolerances are even more exacting than those established by the industry; any wire not meeting the standards is rejected. Colored tags listing size, strength and other data are affixed to acceptable coils. These tags stay on the coils until they are made into wire rope—and the data they contain is kept on file for future reference.

This meticulous adherence to standards characterizes every phase of Wickwire Rope fabrication. Coupled with the services of Wickwire Distributors and Rope Engineers in specifying the rope with the right kind of muscle to do your hoisting or hauling job, it is your assurance of the utmost in performance, safety and long rope life. Wickwire Rope is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed. Next time you order wire rope make it Wickwire Rope. After checking its performance we feel certain that you'll keep on ordering it.

THIS 82-PAGE BOOK ON WIRE ROPE IS FREE. WRITE FOR YOUR COPY TODAY!

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write —Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Mass.

WICKWIRE ROPE

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

CF&I & SUBSIDIARIES

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. EXECUTIVE OFFICE—500 Fifth Avenue, New York 18, N. Y.

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THE *Original* DUAL FUEL OIL TREATMENT

L·S·O TRADE MARK

Liquid SOOTOUT

T. M. REG. U. S. PAT. OFF.

CONSTANT *Cleaning Action* FROM TANK TO STACK

MORE and more steamship companies are adopting the use of Liquid SOOTOUT. This popularity is due to its outstanding results.

Along the waterfront and in the main offices, chiefs, port engineers as well as main office executives, are hearing the name Liquid SOOTOUT— L-S-O; its top performance is making it a topic of conversation.

Liquid SOOTOUT—L-S-O, is the successor to the old-type powder fuel oil treatments and sludge solvents. Liquid SOOTOUT is different as it provides DOUBLE CLEANING ACTION FROM TANK TO STACK, with less cost and less labor.

Ask the man who is using it.

FOR TANK—Liquid SOOTOUT is a concentrated chemical liquid which, when applied to fuel oil in proper proportions, disperses condensation, also sludge forming elements, and reduces strainer, preheater, and nozzle maintenance.

FOR FIRESIDE—Liquid SOOTOUT removes carbon scale and slag in combustion areas, economizers and superheaters. It produces an effective and continuous cleaning action from tank to stack with fuel as burned.

Warehouse Stocks Available At

Baltimore, Maryland	The Terminal Warehouse Co.
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Brooklyn, New York	Lehigh Warehouse Corp. of Brooklyn
Brownsville, Texas	Coast Iron & Machine Works
Corpus Christi, Texas	Coast Iron & Machine Works
Galveston, Texas	Galveston Survey Agency
Houston, Texas	Universal Terminal Warehouse Co.
Jacksonville, Florida	Peninsula Warehouse Co.
Los Angeles, California	J. A. Clark Warehouse Co.
Montreal, Quebec	Frederick M. Irvine, Ltd.
New Orleans, Louisiana	Douglas Public Service Corp.
Norfolk, Virginia	Southgate Storage Co.
Philadelphia, Pa.	Terminal Warehouse Co.
Portland, Maine	Galt Block Warehouse Co.
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LUBAID CO., Milwaukee 1, Wisconsin

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FASTER!

WITH THE

American

BOOM TOPPING WINCH

WHAT would it be worth to you, in cash, to save 25 minutes or more on every boom-topping operation? Add up all the factors—number of hatches, number of booms, number of crewmen—and the figure becomes tremendously important.

You *can* make that saving, with American Boom Topping Winches. Instead of spending about 30 minutes, as in manual operation, you can use the simple, compact, electric-powered American Winch to raise the boom from stowed position to working position in *2½ minutes!* Even the most inexperienced deckhand can safely handle it.

Design, installation, and operation are amazingly simple. The American Boom Topping Winch mounts horizontally or vertically on the mast, king post, deck house or elsewhere. One simple control lever—located at any point desired—governs all motions. In addition to raising or lowering the empty boom, it will hold a full load at any angle, without the slightest danger of accidental dropping.

Want the details? Inquire at any "American Hoist" sales office (located in all principal ports) for literature and prices.

American Hoist
and DERRICK COMPANY
St. Paul 1, Minnesota

Plant No. 2: So. Kearny, N. J.

Sales Offices: NEW YORK • PITTSBURGH • CHICAGO
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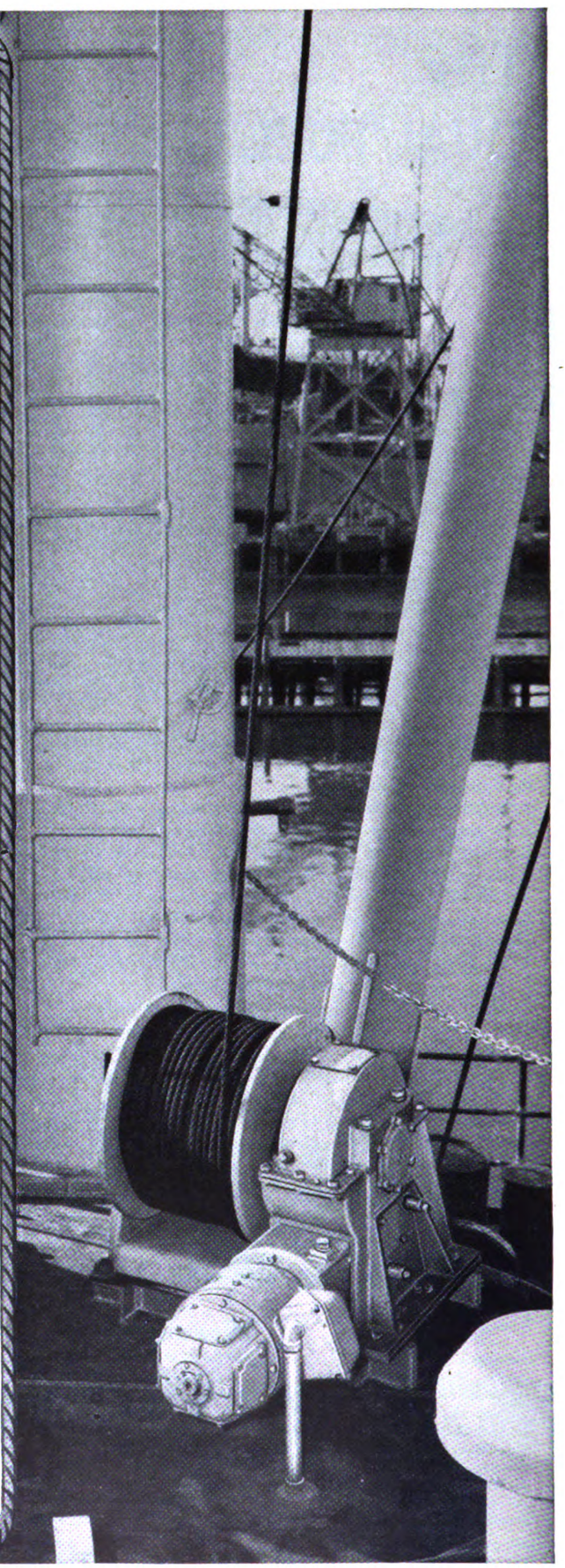

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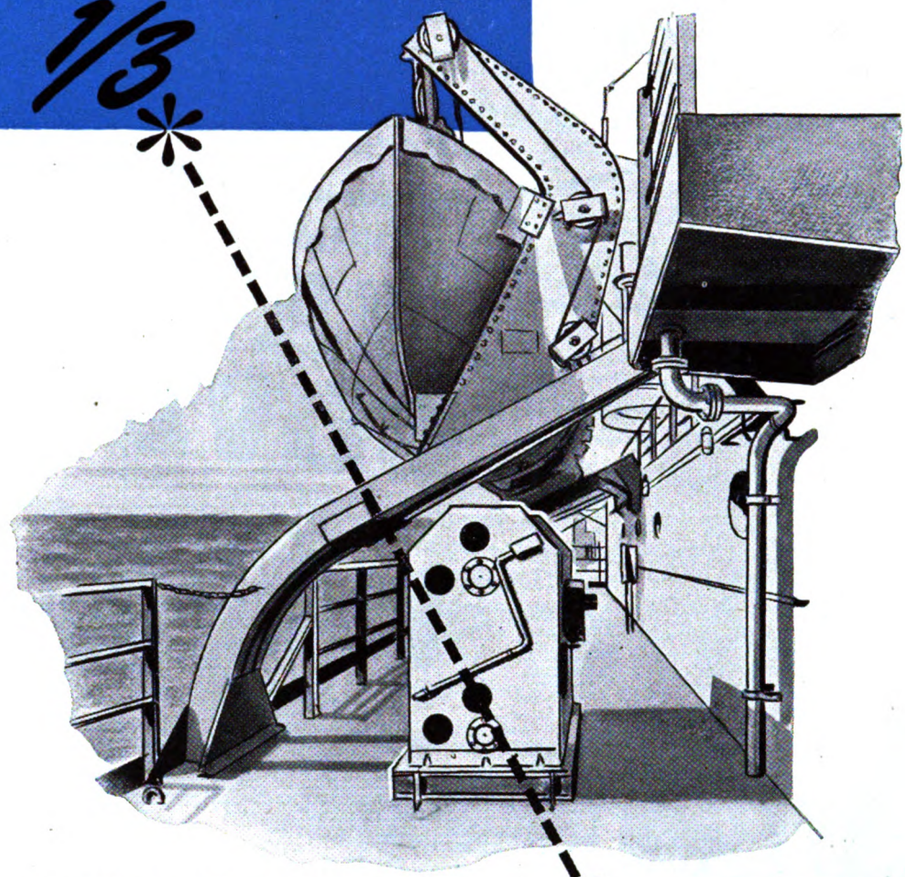
cut the weight of lifeboat stations 1/3*



Lop off tons of weight topside with lifeboats, davits and winches of Alcoa Aluminum. These installations, at two thirds the weight of other materials, increase safety and improve ship characteristics.

Aluminum lifeboat equipment resists corrosion and requires less maintenance. Painting delays will not produce red rust.

On your new ship construction or refitting, let Alcoa marine development engineers help you make these dollar savings. ALUMINUM COMPANY OF AMERICA, 1834 Gulf Bldg., Pittsburgh 19, Pa.

* with ALCOA ALUMINUM

ALCOA® FIRST IN ALUMINUM

ALCOA ALUMINUM 1888 1948 60 YEARS OF SERVICE

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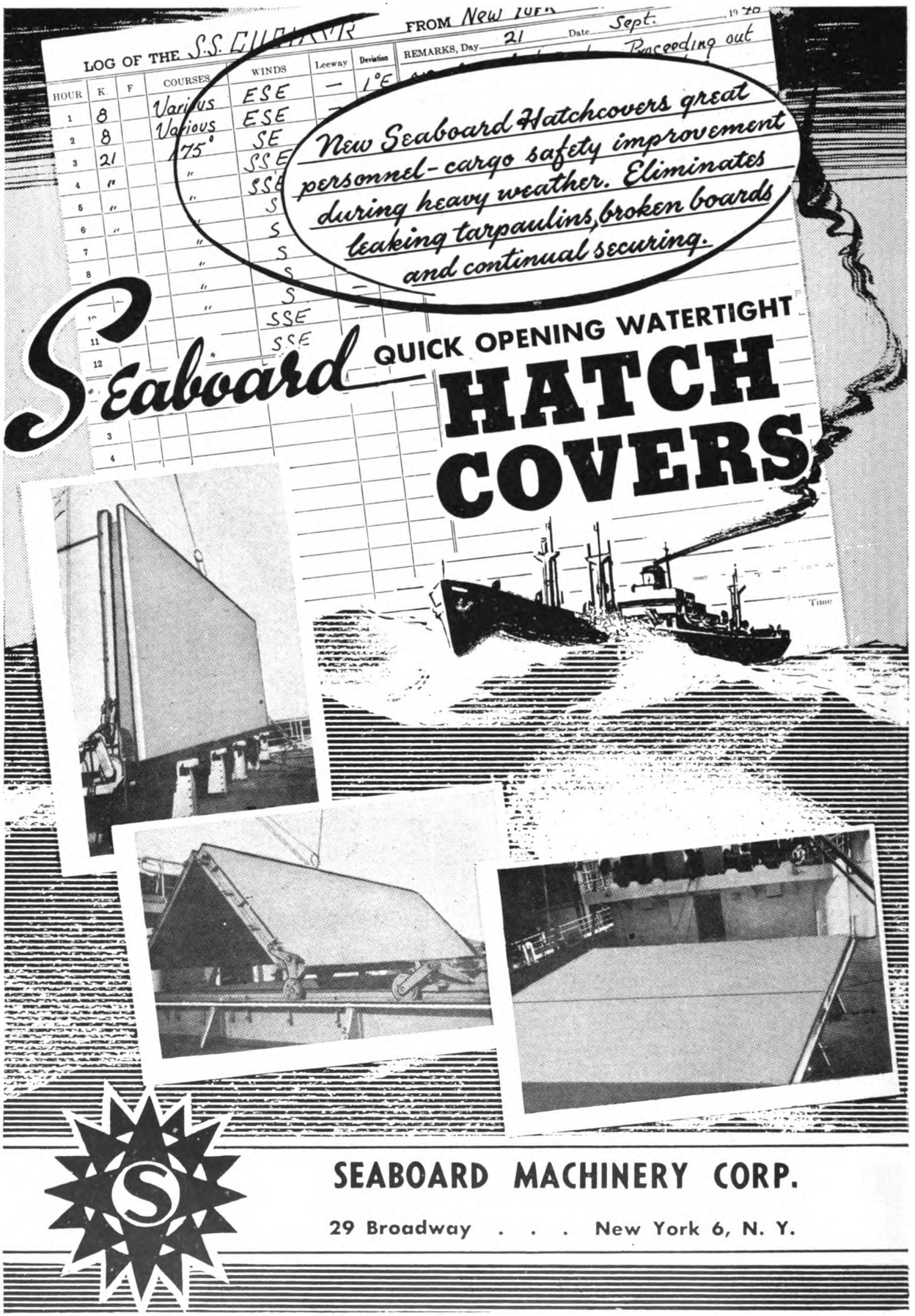

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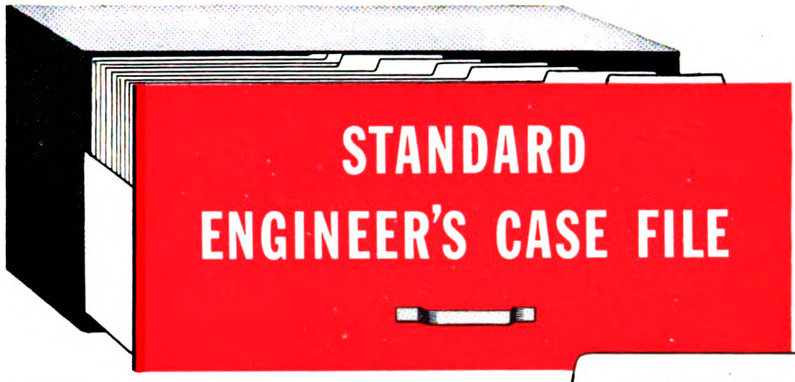
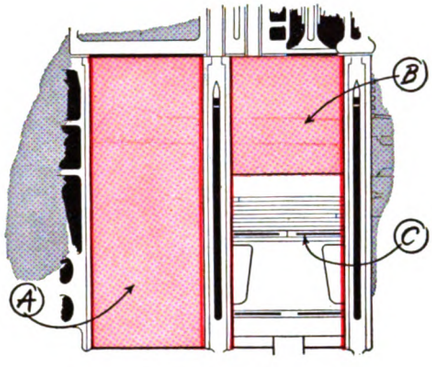


CASE D119E—REDUCING WEAR ON LINERS IN DIESEL ENGINES



DIESEL ENGINE LINERS AND PISTON

In high-speed Diesel engines lubricated with RPM DELO Diesel Engine Lubricating Oil, wear on liners was held to a minimum with little variation over their entire areas. A constant lubricating film was maintained on them even in high-temperature belts. RPM DELO Oils are recommended for all types of Diesels. Come in all viscosity grades necessary for your engines.

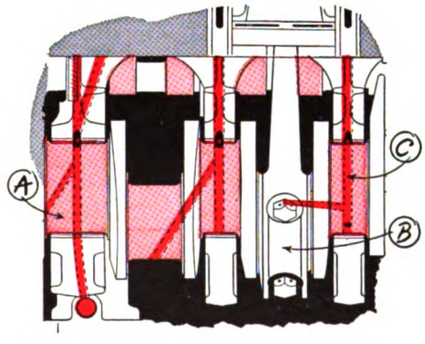
A. Special additive provides metal-adhesion qualities...keeps oil on all parts whether hot or cold, running or idle.

B. An anti-oxident resists formation of lacquer—resistance to extreme heat provides lubrication in the toughest conditions.

C. Contains detergent which keeps rings clean and operating freely...prevents scratching and gouging of liners.

RPM DELO Diesel Oil will not corrode any bearing.

CASE D119F—PROLONGING THE LIVES OF BEARINGS IN DIESELS



SECTION OF DIESEL ENGINE CRANK AND CAM

No bearing failures occurred between overhaul periods in Diesel engines used in the toughest service when they were lubricated with RPM DELO Diesel Engine Lubricating Oil.

A. Non-corrosive to all types of bearing metal...inherent ability of base stocks and added compound resist oxidation and formation of acid which is common cause of bearing corrosion.

B. Maintains a tough lubricating film which withstands excessive shocks and pressures.

C. Special detergent compound keeps oil passages clean and open - allows free flow of lubricant to vital points.

Another compound in RPM DELO Oil prevents foaming of the oil. An accurate measurement of crankcase levels can always be obtained.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20, California.

RPM CALOL

FOR EVERY NEED A STANDARD OF CALIFORNIA JOB-PROVED PRODUCT

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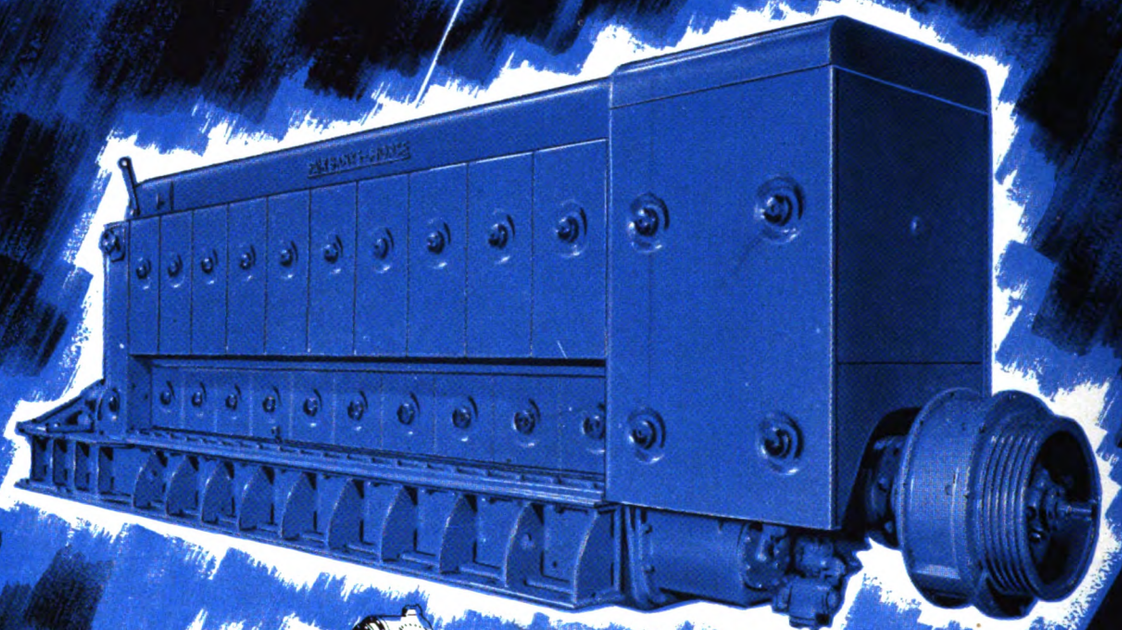
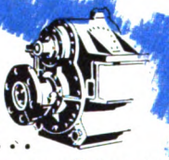
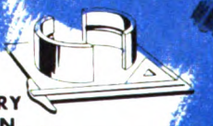
MORE of what you've wanted...

FAIRBANKS-MORSE MODEL 31 MARINE DIESELS





LARGER, STURDIER REDUCTION GEARS . . .
You can use the larger, more efficient, low r.p.m. propellers because the sturdier gears take severe strains with direct-drive stamina.



REVOLUTIONARY BEARING DESIGN . . .
New bearing material, practically indestructible. Main and connecting rod bearings interchangeable with identical upper and lower halves.

SIMPLIFIED CONTROLS . . .
Pneumatic finger-tip remote controls to sailing clutch and forward end power take-off.

REMOVABLE CYLINDER LINERS . . .
With integral leakproof water jackets. Cylinder heads completely water-cooled.

To learn more about the Marine Diesel that has more of what you've always wanted, see your local Fairbanks-Morse Diesel expert

Fairbanks, Morse & Co., Chicago 5, Ill.

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A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • STOKERS • SCALES • MOTORS • GENERATORS
PUMPS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

COOL RUNNING . . .
Heads, ring sections and skirts of pistons are oil-cooled. Full pressure lubrication to all moving parts.

HORSEPOWER RANGES . . .
From 175 to 480 horsepower —available with all required power auxiliaries.

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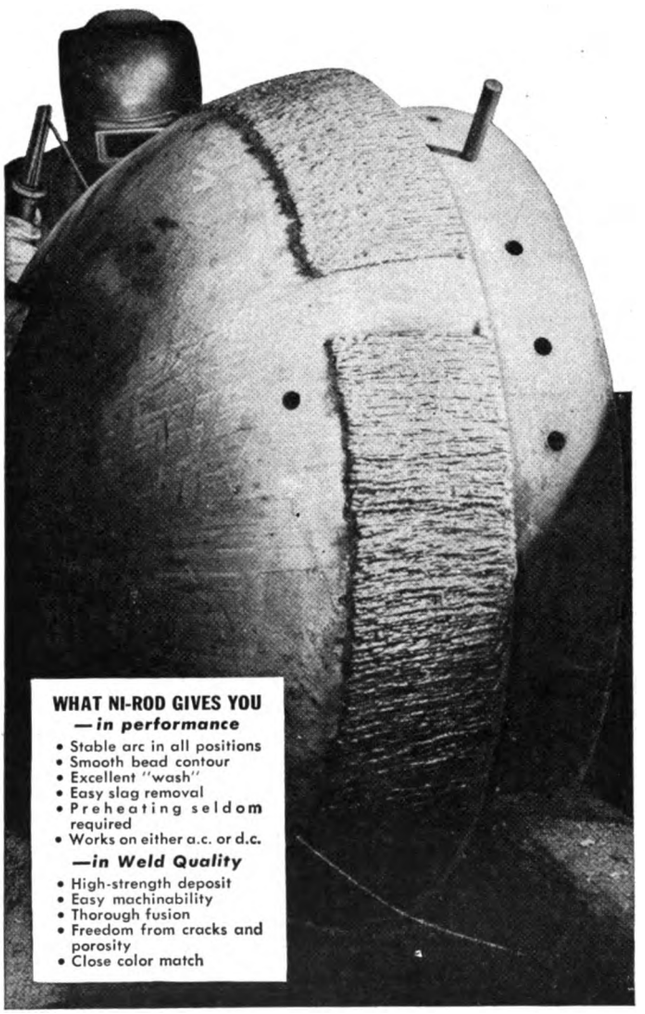
If it's CAST IRON you can weld it with NI-ROD



NI-ROD WELDING ELECTRODES SUCCESSFULLY BUILT UP THIS WORN DIE

Dished heads are just one of the products of Lukens Steel Company, Coatesville, Pa.

They're formed with large hemispherical dies. Dies made of cast iron. Dies that are fairly expensive. When one wears down, Lukens' maintenance men try to restore the original contours.

For several years Lukens had used brazing to build up the worn areas. Then they tried Ni-Rod* welding electrodes because of good reports on its strength and easy machinability.

Here's what Lukens has to say about this repair job:

> **"With other wires, it was found that welds would pull loose from the casting when in use. Ni-Rod was the only electrode that could be used successfully. It would not pull loose when in operation, and had a very good wearing quality. We now use Ni-Rod for building up dies to insure good wear and where pressure on the die is involved."**

The welded die (before machining) is shown at the left. Note the smooth layer of Ni-Rod beads. Proof of Ni-Rod's easy handling!

*Reg. U. S. Pat. Off.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

TRY NI-ROD AT OUR EXPENSE!

Prove to yourself that Ni-Rod has taken cast iron welding out of the "hit-or-miss" class.

Send in the coupon and get 3 free electrodes. Try 'em on any cast iron job you have. See if they're not the easiest-handling electrodes you ever used to weld cast iron.

Time and time again, Ni-Rod can save you money in repairing damaged iron castings; in building up worn areas; in correcting machining errors; on the production line to join cast iron to steel.

SEND IN COUPON TODAY ➡

THE INTERNATIONAL NICKEL COMPANY, INC.
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Gentlemen: I'd like to try Ni-Rod welding electrodes. Please send me 3 free rods of the diameter I have checked.

☐ 3/32" ☐ 1/8" ☐ 5/32" ☐ 3/16"
(Please check *one* size only)

Name.....

Company..... T.L. 11-48

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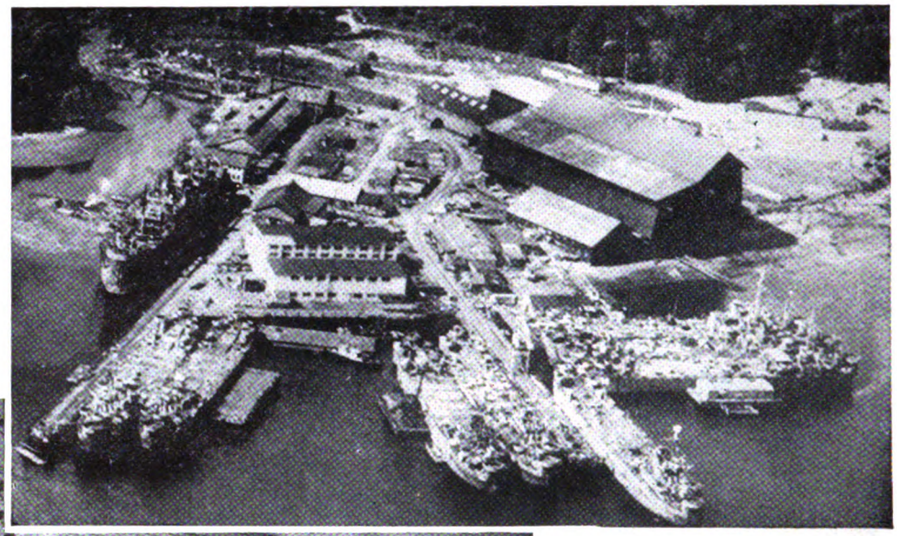
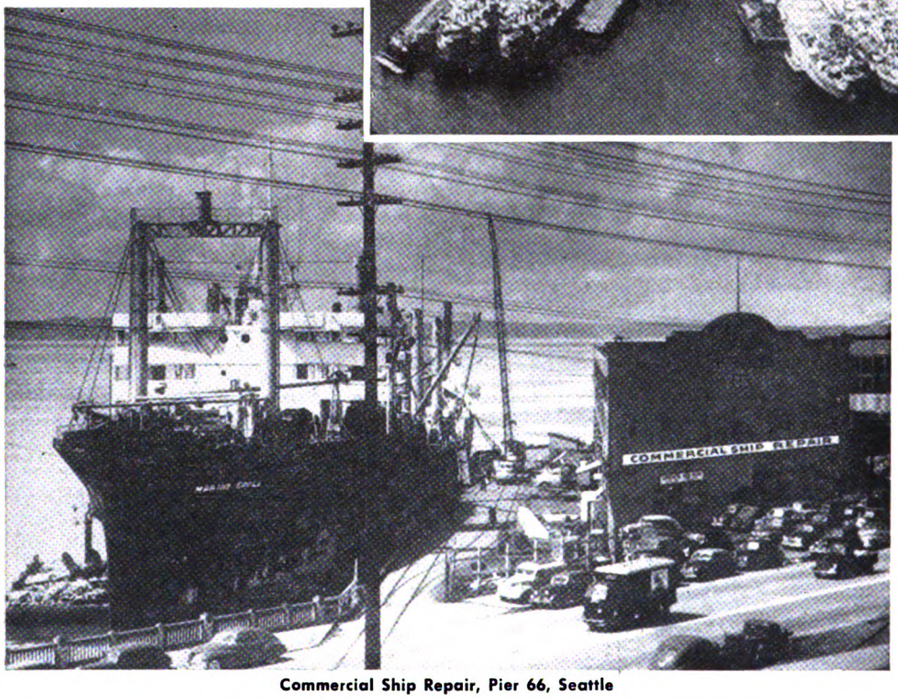
AND NOW — ON PUGET SOUND

THREE PLANTS at which to Serve You





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Announcing--- **Opening of Tacoma Plant**

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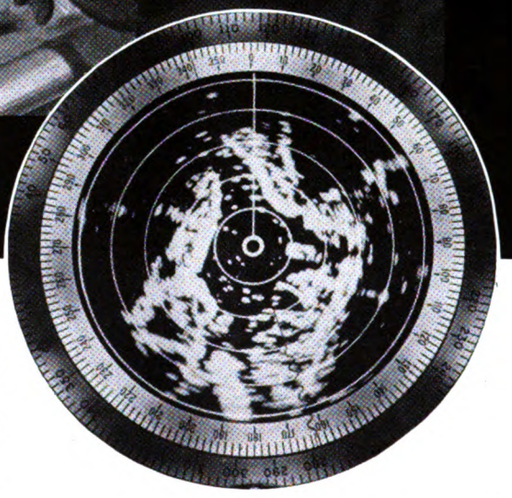
Clear Sailing on the Bridge...

when it's Dirty Weather Outside

No matter how dirty the weather . . . heavy fog, rough waters, rain- or sleet-swept seas . . . ships equipped with Mariners Pathfinder* radar have clear sailing *always*. The reason — Mariners Pathfinder penetrates space . . . brings a clear, visual picture of both long range and nearby hazards to the bridge . . . picks out other ships, buoys and shore lines. It enables the captain to maintain accurate schedules and increase revenue by avoiding costly weather delays.

The Mariners Pathfinder 10 cm (S-band) has proven itself the best commercial radar available for the majority of marine installations . . . the 3 cm (X-band) for restricted and inland waterways. Investigate the protection and dollar savings that Mariners Pathfinder 10 cm or 3 cm gives your vessels. Write for complete information, today.

*"Mariner's Pathfinder" is the trademark of the Raytheon Manufacturing Company denoting its commercial search radar.



Upper Bay, New York, off Robins Reef Light using 5-mile range.

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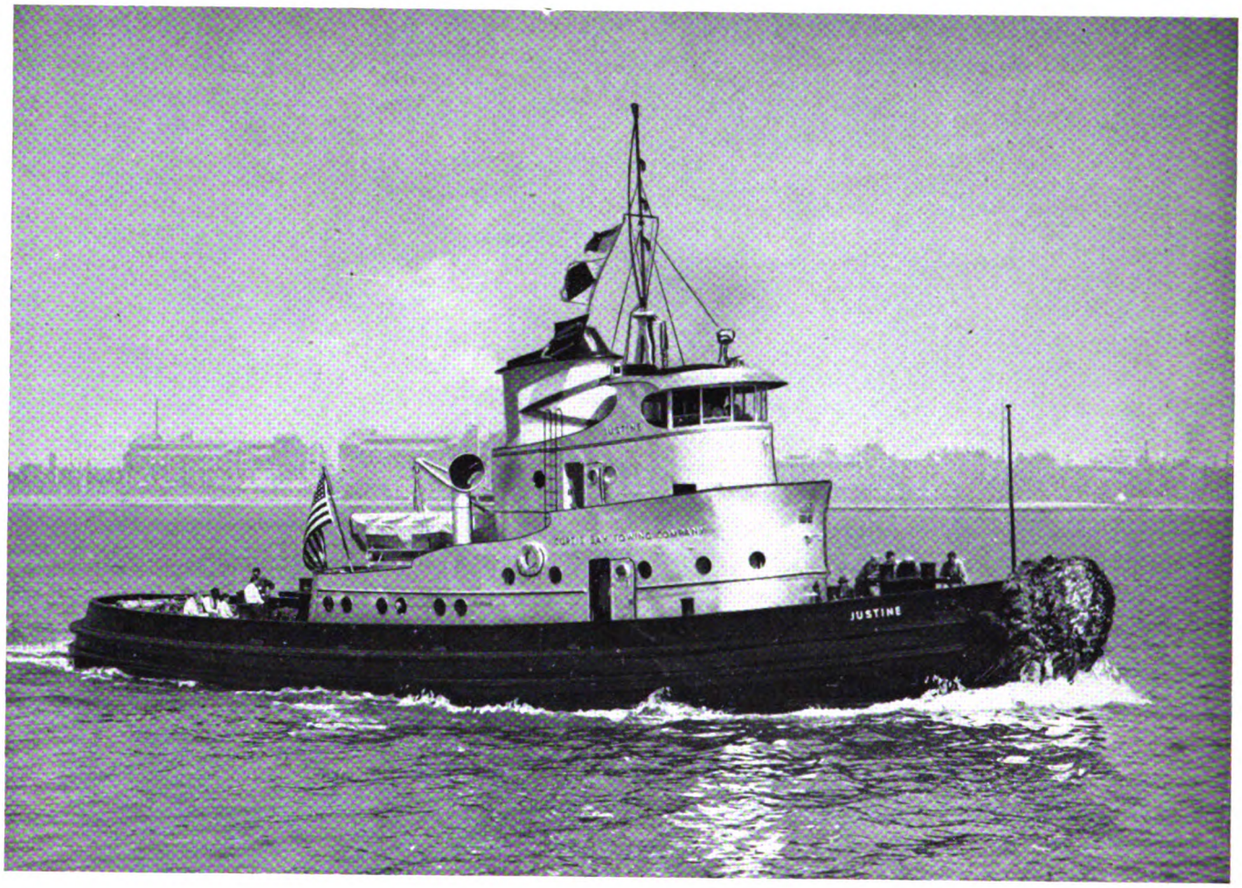

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OF PENNSYLVANIA

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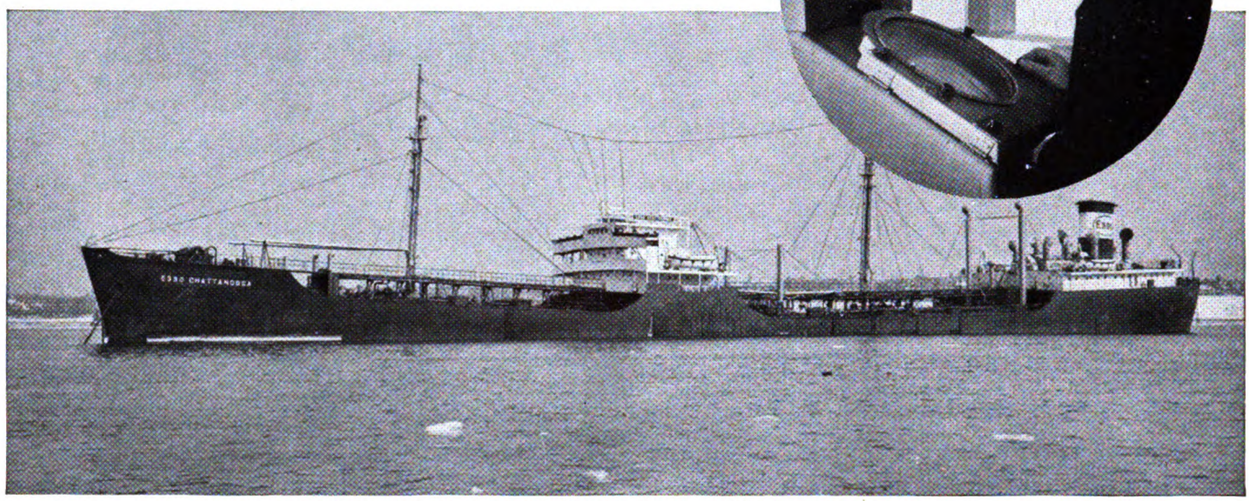
The Master of ESSO CHATTANOOGA, *views the 12-inch scope of Radiomarine Radar.*

The ESSO CHATTANOOGA, *one of the twenty-one ESSO Tankers to be equipped with Radiomarine Radar. Many ESSO vessels are also equipped with Radiomarine Radio Direction Finders, Radiotelegraph and Auto Alarm Equipment.*



21 RADIOMARINE 3.2cm RADARS for Esso tankers will speed deliveries in all weathers

You get all 4 navigational aids with Radiomarine 3.2cm Radar

Pilotage

Location Finding

Anti-Collision

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● By the end of 1948 you'll see Radiomarine's 3.2cm, *4-purpose* Radar aboard twenty-one of the sea-going tankers of the Standard Oil Company (New Jersey) fleet. In addition, there's also one aboard the ESSO Standard Oil Company's powerful new towboat, the ESSO LOUISIANA.

In all kinds of weather . . . through fog, darkness and storm . . . on the high seas . . . in and out of heavily trafficked ports, Radiomarine Radar will help ESSO tankers operate on regular schedules . . . make fast and safe deliveries.

Ship operators get more for their money with Radiomarine's 3.2cm Radar. Its *4-purpose* application is the answer to faster, safer, more dependable navigation at sea, in harbors or on inland waters.

For complete information write: Radiomarine Corporation of America, 16 First St., San Francisco, Cal.; Tel.: Garfield 1-0673.

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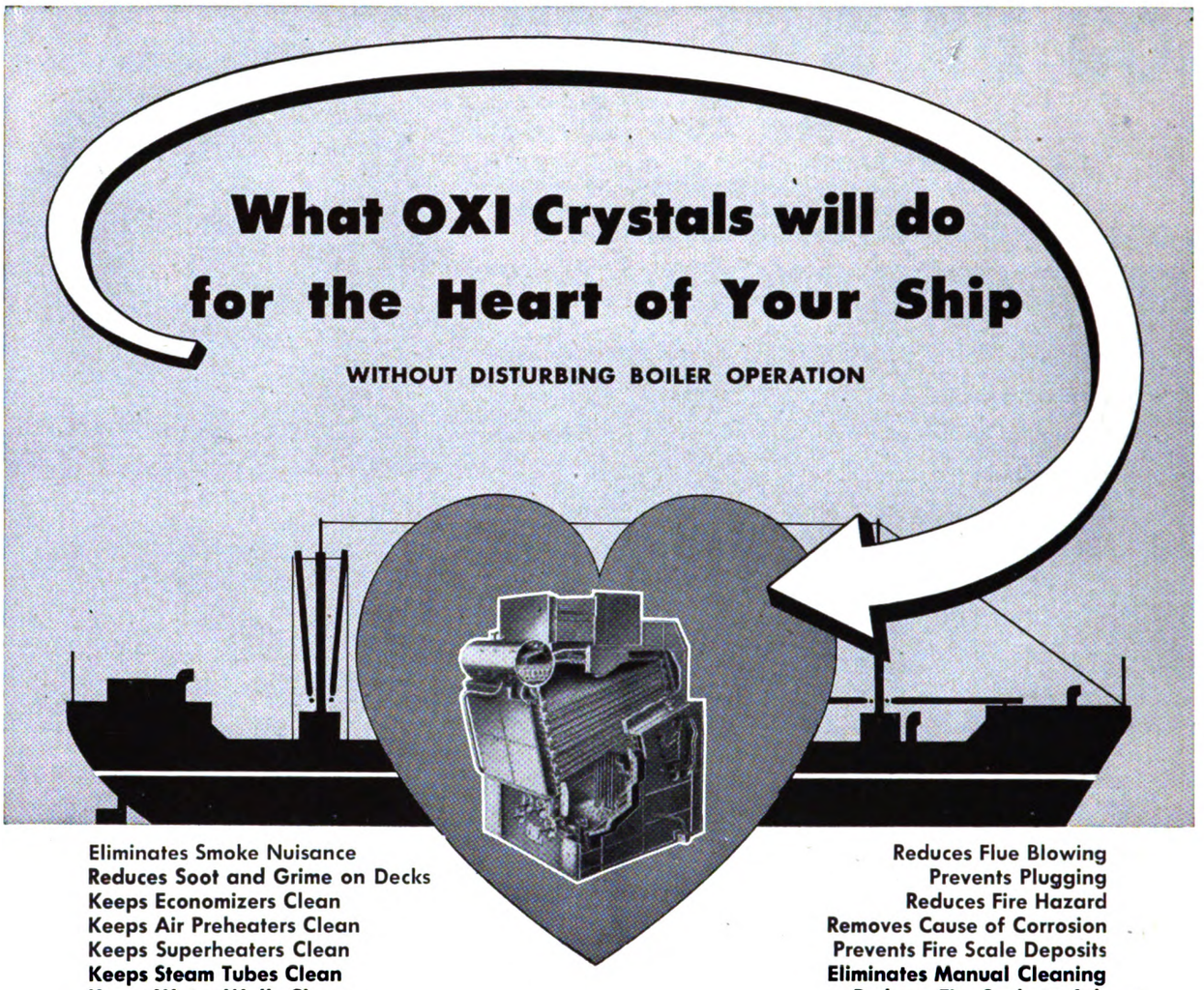
What OXI Crystals will do for the Heart of Your Ship

WITHOUT DISTURBING BOILER OPERATION



Eliminates Smoke Nuisance
Reduces Soot and Grime on Decks
Keeps Economizers Clean
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Keeps Superheaters Clean
Keeps Steam Tubes Clean
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Reduces Flue Blowing
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Reduces Fire Hazard
Removes Cause of Corrosion
Prevents Fire Scale Deposits
Eliminates Manual Cleaning
Reduces Fire Scale to Ash

CHEMICALLY CLEANS THE ENTIRE FIRESIDE OF BOILERS

FREE OXI SERVICE

At your request and without cost or obligation, one of our qualified trained engineers will inspect your boilers when in port, and submit to you a written report regarding the results that can be obtained with the Oxi Chemical Process. He will make the initial application and instruct your operating engineers in the most effective method to get maximum results in your boiler. He will then inspect your boilers periodically and submit reports of progress.

Consult an Oxi Field Engineer—now available at major ports—or write our General Office for further information.

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flying two "American" flags

ONE OF THIS COUNTRY'S largest and finest fleets of commercial vessels . . . one of the world's important merchant fleets . . . is owned and operated by United States Lines Company.

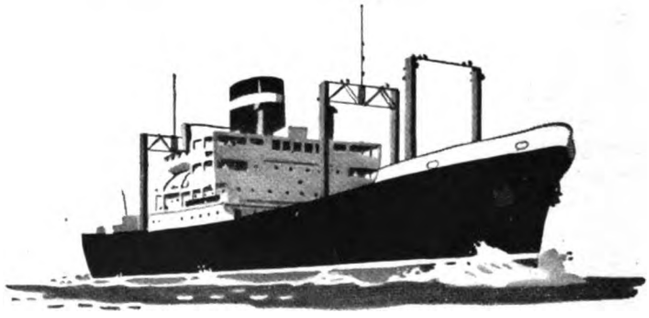
Each of these modern American-built ships flies two distinguishing flags . . . the "Stars and Stripes" and the "Blue Eagle" house-flag of its owners.

These two flags . . . wherever you see them on the high seas or in the world's great ports . . . are your assurance that American security and American foreign trade are at one and the same time being protected and properly served.

Whenever you ship or travel by ocean, be sure to choose American-flag vessels. They offer you unexcelled service and they help keep your country strong and free.

S. S. AMERICA

Largest, fastest, finest American-flag passenger liner. Sails between New York, Cobh, Southampton and Havre approximately every 3 weeks.



One of the company's 40 modern C-2 type cargo vessels in service between North Atlantic American ports and Ireland, United Kingdom, Continental Europe, the Far East, Australia and New Zealand.

One of six modern, Victory-type cargo vessels in the fast New York - Antwerp - Rotterdam service . . . among the 47 company-owned ships operated by the United States Lines Company.

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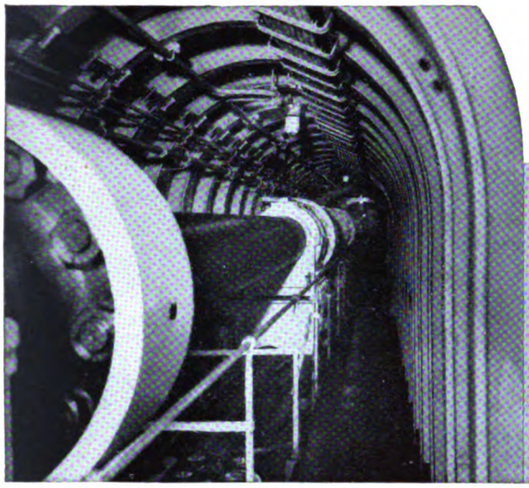

SHAFT ALLEY Chatter

Bill Russell Goes to Camden for APL

William Russell, veteran San Francisco area United States Maritime Commission machinery inspector, has joined the American President Lines as an owners' representative at the New York Shipbuilding Corporation at Camden, New Jersey, during the construction of three V-2000 passengers ships for APL round-the-world service. Mr. Russell recently was with the Maritime Commission at the Bethlehem shipyard at Alameda, California, during the construction of the APL liners PRESIDENT CLEVELAND and PRESIDENT WILSON.

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Walter Martignoni Receives Navy Award

Walter L. Martignoni, San Francisco marine surveyor and consultant engineer, recently was presented with the Secretary of the Navy's Distinguished Public Service Award for his splendid record as Pacific Coast director of maintenance and repairs, War Shipping Administration, from 1942 until 1945. In this capacity he supervised conversion of merchant ships to Navy use and built up repair facilities which kept ships moving despite wartime difficulties.

More recently Mr. Martignoni distinguished himself for his supervision of the unusual salvaging job of the ms DIAMOND KNOT. Of a cargo of 7,470,000 cans of salmon 5,774,000 cans, valued at $2,000,000, were recovered.

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Admiral Stedman Awards Trophy To Kings Point Academy

The United States Merchant Marine Academy celebrated the fifth anniversary of its dedication at Kings Point. Highlighting the program was the presentation of the Stedman Trophy for athletic excellence, a trophy presented to Rear Admiral Gordon McLintock, superintendent of the Academy, by Rear Admiral Giles C. Stedman, USNR. Miniature medallions of the trophy were then awarded by Admiral McLintock to graduates who had been selected by the Academy as outstanding among the entire regiment each year for athletic excellence and qualities of good sportsmanship.

Admiral Stedman, now vice president of the United States Lines, reported to the Academy in the Spring of 1942 as Commandant of Cadet-Midshipmen after the fall of Singapore, when his ship, the USS WEST POINT, now the luxury liner AMERICA, evacuated the last of the allied refugees from that port under a hail of Japanese bombs. During Admiral Stedman's early service at Kings Point, he was charged with the planning and construction of the Academy and formulation of its educational program, which operated in temporary buildings as construction went on apace. Later he became its second superintendent, serving for a three-year tour of duty, during which he administered the Academy through its wartime peak of nearly three thousand Cadet-Midshipmen being educated to qualify for their licenses as merchant marine officers and their commissions as ensigns in the Naval Reserve.

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Delta Line Names New York Officers

T. J. Conroy, Delta Line vice-president, has announced in New Orleans appointment of L. E. Barry and F. A. Wendt as manager and assistant manager, respectively, of traffic in Delta Line's New York office.

Barry will be in charge of solicitation in the eastern territory and will continue in his former supervisory capacity of West African operations.

EBERHARD A. SWAN, until recently associated with the J. Paul Thompson Company, San Francisco, has been named manager of Bethlehem's Simpson and Atlantic shipyards at Boston, Massachusetts.

Mr. Swan formerly was assistant manager of the Bethlehem yard at Hoboken, N. J. and was a vice president and superintendent of the Todd shipyard at Erie Basin, Brooklyn.

WALTER MARTIGNONI, left, receives the Navy's Distinguished Public Service Award from REAR ADMIRAL D. B. BEARY, formerly Commandant of the 12th Naval District, and recently appointed President of the Naval War College, Newport, Rhode Island.

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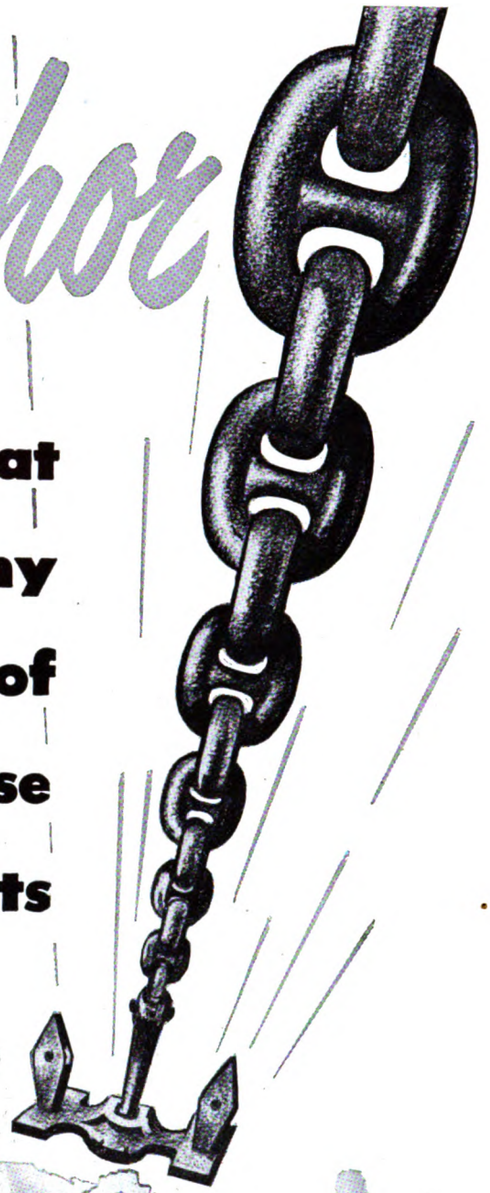
drop anchor at any of these ports



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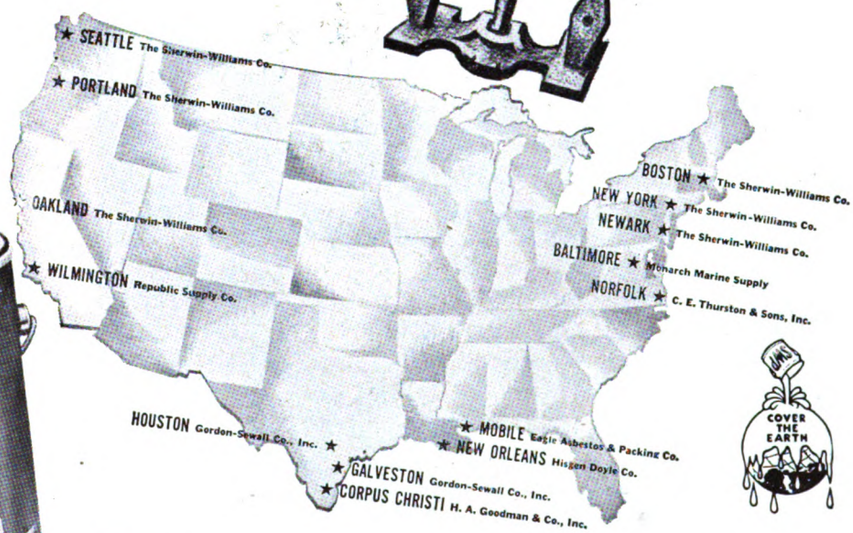

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SHAFT ALLEY (continued) Chatter

Olympic Steamship Company Announces Expansion Plans

Of general interest on the Pacific Coast has been the expansion of Olympic Steamship Company, Inc., which has recently announced several new important developments.

The company was organized in October, 1936, by E. C. Bentzen, George Van Waters, Nat S. Rogers, E. L. Skeel, and the late Frank E. Schorn. Initial service was in the Pacific coastwise trade in a joint operation with Consolidated Steamship Company of San Francisco, organized in 1935 by J. C. Strittmatter, in what became known as the Consolidated-Olympic Line. In 1942, Strittmatter became a stockholder and officer in the Olympic company and Olympic took over all Pacific Coast operations formerly managed under the joint agreement.

Active management of the company is directed by men in their forties or younger. E. C. Bentzen, president and general manager, after two years in the Army, started with Shaffer Terminals, Inc., Tacoma, in 1922. In 1925 he opened the Tacoma office of McCormick Steamship Company and was transferred to Seattle in 1929 as Puget Sound district manager.

M. M. Stewart joined the company in 1937 as stenographer and general clerk to rise to his present position of assistant to the president. For four years during the war he served as an officer in the Navy.

Formerly with McCormick, F. J. Ewers, freight traffic manager, joined Olympic in 1938 as clerk and dock cashier. He served four years with the Coast Guard during the war and as an officer in command of an LST participated in the invasion of Okinawa.

Operating manager G. R. Seefeldt joined the company in 1940 following his graduation from the University of Washington.

G. S. Cleverdon, comptroller and assistant treasurer, was named auditor for the company in 1942 with a background of experience as auditor for the state of Washington division of banking.

Captain C. E. Gannon, marine superintendent, served with the Standard Oil Company of California from 1922 to 1934. He was with the Coos Bay Lumber Company from 1936 to 1941, then with Richfield Oil Company and Union Oil Company until August, 1942, when he was named port captain for Olympic and later promoted to his present position.

Following service at sea in all grades, Port Engineer Merl A. Johnston came to Olympic in 1942. Originally assigned to the San Francisco office he was transferred to Seattle in 1946.

A. R. Palmer, port steward, joined the company in January, 1946. During the war he was a chief steward with the Army Transport Corps. Earlier he served with the Alaska Steamship Company and Pacific Steamship Company.

Irving J. Henningsen came to the company in 1946 as manager of claims and insurance. He was an Army captain in the South Pacific during the war, earlier graduated from Stanford University and was a purser on round-the-world liners.

In charge of the company's California operations are Mr. Strittmatter, executive vice-president, and David M. Gregory, director of traffic. Both were formerly with McCormick Steam, where Strittmatter was vice-president and director of traffic.

They are assisted by Ernest H. Johannsen, assistant traffic manager in the San Francisco area. Previously Johannsen was with Pacific Steamship Company.

Officials of the company in addition to President Bentzen and Executive Vice President Strittmatter are such well-known business men as George Van Waters, Darwin Meisnest, and Eric A. Johnston, vice presidents; E. L. Skeel, secretary; and Nat S. Rogers, treasurer. The board of directors is made up of the foregoing officers and Mr. Gregory of the San Francisco office, and Harry Henke, Jr., Seattle.

In rapid fire sequence Olympic Steamship Company has announced the firm's appointment as Pacific Coast agents for Castle Line, opening of a Los Angeles office and a long term lease on Pier 28, Seattle.

(Continued on page 26)

OLYMPIC STEAMSHIP COMPANY PERSONNEL . . . Top row, left to right: E. C. BENTZEN, President and General Manager; J. C. STRITTMATTER, Executive Vice President; GEORGE VAN WATERS, Vice President; NAT S. ROGERS, Treasurer; ERIC A. JOHNSTON, Vice President.

SECOND ROW, left to right: DARWIN MEISNEST, Vice President; E. L. SKEEL, Secretary; DAVID M. GREGORY, Director of Traffic; M. M. STEWART, Assistant to the President; F. J. EWERS, Freight Traffic Manager.

THIRD ROW, left to right: G. R. SEEFELDT, Operating Manager; G. S. CLEVERDON, Comptroller and Assistant Treasurer; CAPTAIN C. E. GANNON, Marine Superintendent; A. R. PALMER, Port Steward; I. J. HENNINGSEN, Manager, Claims and Insurance.

FOURTH ROW, left to right: M. A. JOHNSTON, Port Engineer; ROBERT O. VERNON, General Freight Agent, and E. H. JOHANNSEN, Assistant Traffic Manager, San Francisco; JOHN BERG, District Manager, and VICTOR KRUGER, District Freight Agent, Los Angeles.

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CAPTAIN WAYNE PRINGLE OF THE REISS STEAMSHIP COMPANY'S SELF-UNLOADER CHARLES C. WEST

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SHAFT ALLEY (continued) Chatter

Tacoma Plant Announced by Commercial Ship Repair

Establishment of a complete facility for voyage and loading berth repairs at 2606 East 11th Street, Tacoma, has been announced by E. A. Black and J. J. Featherstone, co-partners in Commercial Ship Repair, Seattle and Winslow.

Barney Trout, well known in Pacific Coast ship repair circles, has been named general manager of the Tacoma plant. Early in his career he was associated with his brother, Captain Vance Trout, now operating manager and vice president, Coastwise Line, San Francisco; and with Damon and Matt Trout, of Marine Electric Company, Portland. He acted as Seattle representative for Marine Electric Company for a number of years, was electrical superintendent at Winslow Marine Railway and Drydock Company from 1941 to 1944, and since has engaged in ship repair management at Seattle, Olympia and Coos Bay.

With headquarters in Seattle, Commercial Ship Repair has complete electrical, pipe, sheet metal, carpenter and other shops for ship repair at Pier 66, Seattle; a covered shipbuilding ways, a 4,000 ton drydock, and complete ship repair facilities at Winslow, and has a working agreement with Everett Pacific Shipbuilding and Dry Dock Company for drydocking vessels up to 550 feet and 14,000 tons.

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Alcoa Announces Change in Staff

Changes in the staff of the Alcoa Steamship Company's Southern Division have been announced in New Orleans by William H. Trauth, division manager.

They include transfer of T. L. Williamson from New York to New Orleans and his promotion from assistant general passenger manager to passenger traffic manager of the Gulf area; appointment of Ray Hering, former New York passenger agent, as general passenger agent on the Gulf, and transfer of Captain Joseph T. Drake, formerly assistant port captain at New York to a similar post in the Southern Division.

Trauth also said that Walter Hinshaw of the New York division engineering department has been appointed Gulf district purchasing agent with headquarters in New Orleans. Arthur J. Ivey, formerly port engineer for Alcoa at New York, has been transferred south to carry on similar duties.

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Portland Propeller Club Sponsors Essay Contest

Following the annual election in September, officers of the Portland, Oregon, Propeller Club have announced a program of port development to include sponsorship of an essay contest among high school students on the subject: "What the Port of Portland Means To The Community and The State."

A student Ports Committee consisting of Wendell Gray, chairman; Harold C. Jones and R. L. Kingsbury will handle the essay contest. Gray is an admiralty attorney and member of the Portland school board. Jones is United States shipping commissioner in Portland, and Kingsbury is district manager of Alexander & Baldwin, Ltd., agents for Matson Line.

President Thomas J. White has announced chairmen of other committees as follows: House, Robert L. Cormack, Bank of California; Program, A. C. Kornahrens, Commission of Public Docks; Legislative, George D. LaRoche, admiralty attorney; Ways and Means, Kenneth R. Cochran, Bank of California; Publicity, Roy Beadle, The Oregon Journal; Admission, Captain H. Shaver, Shaver Transporting Company; Membership, Captain Hugh E. Shaw, Shaw Bros. & Associates; Outport Membership, F. G. Pender, Port of Vancouver, Washington.

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Olympic SS Personnel

(Continued from page 24)

In the Los Angeles office John Berg is district manager, Robert O. Vernon is general freight agent and Victor Kruger is district freight agent. Berg and Kruger have been with Olympic for years and Vernon is a veteran of the trans-Pacific trades having been with American President Lines.

A subsidiary of the British Moller interests, the Castle Line recently inaugurated a round-the-world express service from New York and other Atlantic coast ports via Panama Canal, Los Angeles and San Francisco to Manila, Hongkong, Shanghai and other Far Eastern ports. Homeward the vessels return via Suez.

This route will be served by eight vessels sailing every two weeks by the early part of 1949. Four of these are C-3 type baby flattops converted into dry cargo liners, and four new vessels are now under construction in England—the first the ss PENRITH CASTLE. The new ships are the latest in cargo vessels, are comparable in size to C-3's with a cruising speed of 17 knots. All vessels are Cargocaire-equipped and have reefer space. The service was inaugurated in August by the ss MUNCASTER CASTLE, followed in September with the ss GREYSTOKE CASTLE.

Olympic Steamship Company is also operating agent for Permanente Steamship Corporation, owners and operators of the ss PERMANENTE SILVERBOW and the ss DIAMOND CEMENT, and is also Puget Sound agent for the Burns Steamship Company, Shepard Steamship Company and Dichman, Wright and Pugh, Inc. The company operates six vessels under its own house flag in world-wide trading.

Company offices recently were moved to Pier 28, Seattle, and the firm has organized a terminal division for operation of the pier as a public terminal.

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Ben Seaborn Opens as Seattle Naval Architect

Seattle born Ben Seaborn has returned to his home city to enter private practice as a naval architect. Seaborn, in 1932, at the age of 17, designed and drew plans for the yacht CIRCE. Work boats, sloops, and other designs have since come from his boards. He joined the Kaiser Company, Inc. staff at Oakland in 1941 where he was engaged on frigate design, C-4 conversion work and other executive detail in the Oakland office and in the Richmond yards to conclude with an assignment as manager of the Permanente Steamship Company, a position he held until a Permanente agency arrangement was completed with Olympic Steamship Company.

PORTLAND, OREGON, PROPELLER CLUB elects new officers . . . Left to right, seated: H. C. ASHTON, Commercial Trading and Shipping Company, Treasurer; THOMAS J. WHITE, Admiralty Attorney, President; N. A. MOORE, American Hawaiian Steamship Company, Vice President.
Standing, left to right, Governors: CAPTAIN D. J. McGARITY, Commission of Public Docks; CAPTAIN H. E. SHAW, Shaw Brothers and Associates; GEORGE D. LAROCHE, admiralty attorney; R. B. GILLIAM, Pacific World Shipping Company; D. W. LAWRENCE, W. R. Grace and Company. Officers missing from photo are Drew Haines, Haines Enterprises, Secretary, and H. K. Cherry, E. J. Griffith and Company, Inc., governor. Photo courtesy Ackroyd Photography, Inc.

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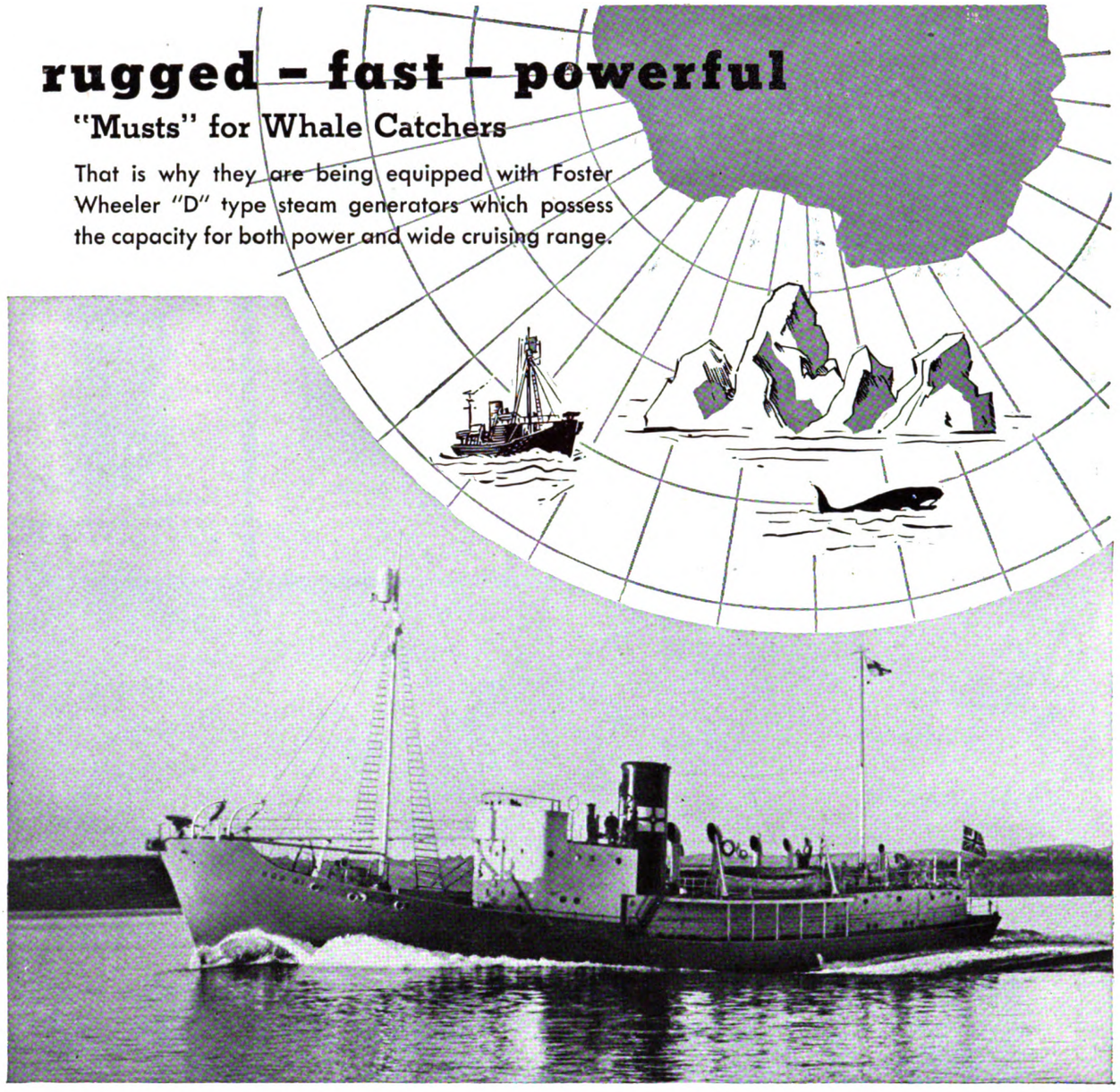

the story of a whale catcher

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The 158-foot whale catcher shown above is one of many operating out of Norway equipped with FW "D" type steam generators.

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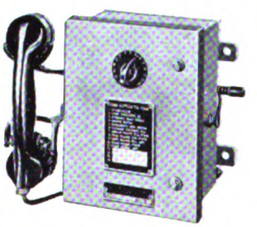

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NOVEMBER, 1948 Vol. 43, No. 12

Official Organ for the Port Stewards' Association of the Pacific Coast; The Society of Port Engineers, San Francisco; The Society of Port Engineers, Los Angeles; The Society of Port Engineers, Puget Sound; The Society of Port Engineers, Portland; The Society of Marine Port Engineers, New York; Steamship Purchasing Agents of San Francisco.

Editorial Features

Take a Look at this Record—Could this Happen to you? 31
Present Trends in Modern Tanker Construction 36
Steam and Diesel—Comparative Operating Data 39
Diesel Engines in Ocean Going Tankers 40
Operating Ideas
Safety at Sea Conference—Effect on Ship Design 48
Probable New Regulations Bilge Pumping Arrangements 49
Emergencies Routine to G-E's "Keep 'Em Sailing Service" 54

Departments

Shaft Alley ..... 22 - 26
Societies 46
Ports ..... 52 - 53
Equipmentalk ..... 58 - 62

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Shipbuilders Council Reports on Vessels

The United States private shipyards September 1, had on order or under construction 72 vessels of 1,000 gross tons or over, totaling 1,052,869 gross tons and two dredges totaling 24,672 displacement tons, according to the Shipbuilders Council of America.

Included in the report are the two fast passenger liners to be constructed by the Bethlehem Steel Co., for the American Export Line, but not the three liners for the American President Line as the contracts had not been executed at the date of compilation.

In addition to the two passenger vessels, the report shows 61 tankers, aggregating 984,180 gross tons or 1,554,300 deadweight tons; three cargo vessels; three trawlers; two ferry boats and one bulk freighter.

Scheduled for 1948 delivery are three cargo vessels in September, one tanker in October and two tankers in December.

Schedule for delivery in 1949 includes 31 tankers, three trawlers, two ferry boats and tow dredges; for 1950, two passenger liners and 27 tankers. In 1951, a tanker is scheduled for delivery.

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Macnamee Urges Support of New Merchant Marine

W. Bruce Macnamee of the National Federation of American Shipping, in a speech before the Army Transportation Association's third annual convention, held in New Orleans in early October, said that despite the great size of our Merchant Marine, it is signally deficient in important respects. "It has become unbalanced in the number of passenger ships that must provide the immediate troop lift in any emergency."

He said further, "a start has been made to correct the dangerous weakness. Although it is only a start, it must have been cheering news to the members of the Army Transportation Association when orders were recently placed for five crack new passenger liners.

"In addition to the five crack passenger ships for which contracts have been placed, there are plans for 13 more to make up, at least partially, for our war losses and to continue the realistic shipbuilding program.

"We believe that it is fair to ask and to insist that we carry all of our domestic water-borne commerce and a minimum of 50% of our overseas exports and imports and to have in addition, an adequate number of modern passenger vessels to be an efficient military auxiliary than can be called upon at once in an emergency.

"If Congress at the new session in January gives us the green light, we will be able to carry out a realistic program that will give us a first class Merchant Marine." This could be accomplished he said, at a total cost to each citizen of 54 cents a year for the next ten years, and that during the period 1936 to 1946 the net operating subsidy was a little more than two million dollars a year, which is considerably less than the government pays to subsidize Cheddar cheese.

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Seven Papers for Architects Meeting

Seven technical papers are announced for presentation and discussion at the 56th annual meeting of The Society of Naval Architects and Marine Engineers at New York November 10-13.

They are:

1. "Marine Salvage," by Rear Admiral William A. Sullivan, USN., Retd.
2. "Economic Selection of Steam Conditions for Merchant Vessels," by Mark L. Ireland, Jr., of the Newport News Shipbuilding and Dry Dock Company, and Douglas C. MacMillan, associated with George G. Sharp, Naval Architect.
3. "Procedures and Influencing Factors in the Design of Marine Boilers," by George W. Kessler of The Babcock & Wilcox Company.
4. "Propulsion Diesel Engines for Landing Craft and Small Boats," by Captain Homer Ambrose, USN., Commander G. C. Humphreys, USN., and Lieutenant Commander F. E. Swiderski, USN., of the Bureau of Ships.
5. "Controllable Pitch Propellers," by Commander Lewis A. Rupp, USN., of the Bureau of Ships.
6. "Comparison of the Power Performance of Ten 600 Foot Single Screw Tanker Hulls as Predicted from Model Tests," by Richard B. Couch and Manley St. Denis, both of the David Taylor Model Basin.
7. "Modern Tankers," by Harold F. Robinson, Chief Naval Architect, Bethlehem Steel Company, Shipbuilding Division, Quincy, Mass., John F. Roeske, Assistant Naval Architect, Sun Shipbuilding & Dry Dock Company, Chester, Pa., and A. S. Thaeler, Assistant Marine Engineer, Pittsburgh Steamship Company, formerly Chief Engineer of the Federal Shipbuilding and Dry Dock Company.

Vice Admiral Edward L. Cochrane, USN., Retd., President of the Society will preside at the technical sessions as well as at the Annual Banquet which will be held on Friday evening, November 12.

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Bethlehem Converts Two Coastal Tankers for Sun Oil

Sun Oil Co. is putting into service two new coastal tankers to expedite increased shipments of gasoline from its Marcus Hook refinery.

Built for the Navy as auxiliary oilers, the tankers were purchased from the U. S. Maritime Commission and converted to Sun's specifications at Bethlehem Steel Co.'s shipyards at Alameda.

The vessels have been renamed the M. S. Mystic Sun and the M. S. Maumee Sun. Each is 220 feet long and has a capacity of approximately 500,000 gallons of gasoline.

Powered by 860 horsepower Diesel engines, they have rated speed of about ten knots.

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HEADING INTO THE YARD . . .

Almost completely light, the Standard Oil tanker W. H. BERG putting in at Moore Dry Dock Company, Oakland, California, for annual overhaul and drydocking.

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TAKE A LOOK AT THIS RECORD— COULD THIS HAPPEN TO YOU?

"Safety mindedness" can go a long way toward preventing marine accidents such as recounted below.

By ADMIRAL H. C. SHEPHEARD
Chief, Office of Merchant Marine Safety, U. S. Coast Guard

Marine casualty records are replete with accidents of every kind. While many valuable lessons have been learned from these casualties by far the greater majority involve repetition of previous incidents. This leads to the question, "Must we repeat marine accidents?"

In this modern era of advanced technocracy, when the wheels of industry accelerate and decelerate at an ever-increasing rate, human beings do not always know how to be safe. New situations, and new combinations of old situations, challenge even the most ingenious of safety enthusiasts. It is well to take due precautions against unforeseen accidents, but unless we know something about the nature and scope of past mishaps, we cannot anticipate the future.

To this extent, therefore, lessons learned from marine accidents should be purposely applied to prevent recurrence of similar accidents. However, to achieve this effect, it is *not* necessary to repeat marine accidents.

Marine operations are far too complex for any one individual to evaluate and forestall every possible contingency. Everyone's "first-hand" marine safety knowledge is necessarily liimted. As a result, each mariner must learn from others, who in turn have, or have not, learned from actual experience.

But experience, alone, is difficult to evaluate. A school principal once said, in speaking of a teacher who had taught for 14 years, "She perpetuated the mistakes of her first year for 13 more." While experiences gained from marine accidents are a valuable aid to marine personnel, we do not, of course, desire to perpetuate the same accidents. Obviously, marine accidents should create a respect for safety through the stimulation of *safety mindedness* on the part of the individual mariner.

Safety Mindedness

It is both desirable and practicable to stress the Utopian theme of safety mindedness, particularly when such a theme can be abundantly illustrated with examples from actual experiences. For this reason, the incidents related herein, taken from recent records pertaining primarily to deck casualties, should be of instructive value, and if heeded, should save considerable misfortunes in the future. In reviewing these casualties it should be remembered that the objective is to *learn* from others—*not* to *imitate* them.

It is not always possible to learn new lessons from every casualty. Many times, an old lesson relearned, perhaps with a new twist, will serve to reinspire those who are thoughtless and negligent. For example, in the following incident, nothing new in the watch-standing procedures of a vessel at anchor is revealed. Yet, negligence and inattention to duty gravitating through the entire heirarchy of licensed officers, from the Master to the Third Mate, gives us an unusual twist to something old. It was probably inevitable that sooner or later this accident would take place, as a lesson in reality from which others may learn.

Inattention to Lost Anchor

One evening, an American vessel departed from a Bristol Channel port, and proceeded to anchorage to await return from shore-liberty of several crew members. As there was difficulty in anchoring, due to excessive headway and sternway, all the chain ran out and had to be heaved back to five shackles. When the vessel finally came to anchor in seven fathoms of water, the weather was: force 2 to 3 wind, calm sea, and visibility 8 miles.

At about 2230, the Master dismissed the pilot and instructed the Third Mate to take bearings on light A and light B. Both the Master and the Third Mate plotted these bearings as: light A, 274° T at 2.9 miles; and light B, 074° T at 3.8 miles. The Master then went to bed after ordering the Third to check these bearings closely and call him at 0700. The Master told the Third to pass all information on to his relief—the Second Mate.

At 2350, the Second Mate, assisted by two men, relieved the watch, and checked the cross bearings every 30 minutes, taking the last check at 0330.

At about 0400, the Chief Mate, together with a Deck Cadet and two men, relieved the watch. While the Chief Mate himself did not check the bearings, he instructed the Deck Cadet to do so. During the early part of the watch the vessel began to roll slightly and then increased as the watch continued. The Quarter-

DO *YOU* KNOW *YOUR* RULES OF THE ROAD? THESE MATES DIDN'T!

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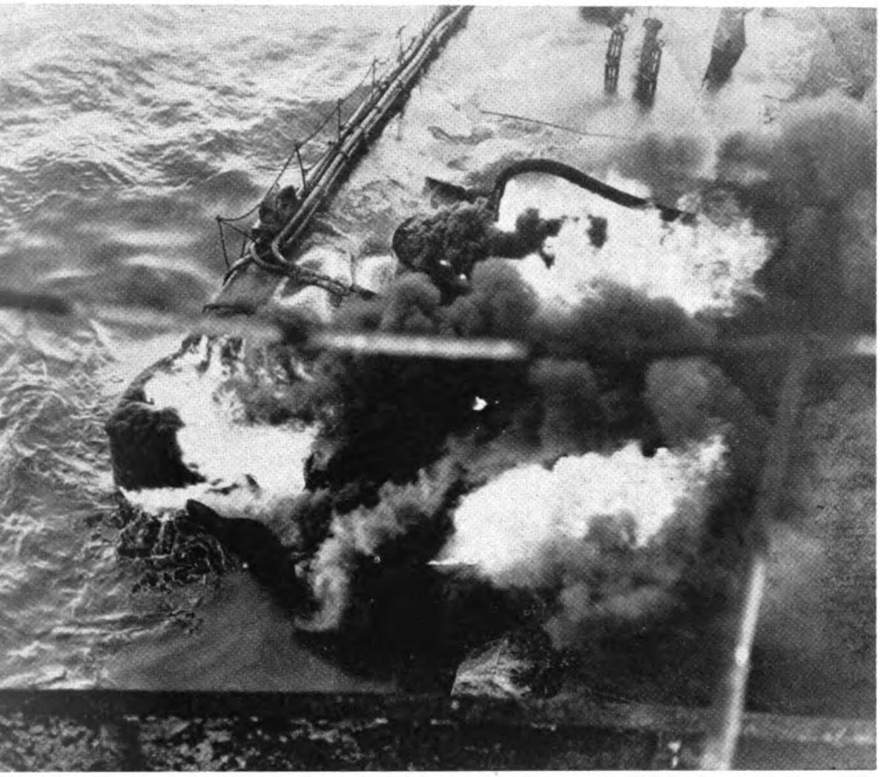

FIRE IS A CONSTANT HAZARD aboard tankers. This one resulted from a collision.

master on watch reported to the Chief that the rudder angle indicator showed 10 degrees right rudder. At 0700, the Master was called, and at 0715, the vessel struck bottom amidships on the port side.

At 0730, the port anchor chain was hauled in—*minus* the anchor and two shackles of chain.

Bearings taken from the grounded vessel showed light A to be 292° T at 7.6 miles, and light B, 334° T at 4.6 miles—an approximate drift of seven miles.

Investigation of the incident revealed that the original bearing of light A, instead of being 274° T at 2.8 miles, was 315° T at 1.5 miles. Light B was correct. The correct bearing of light A was established by testimony of the pilot and shore lookout station, and the fact that the port anchor was recovered at this position. In other words, the Third Mate made an error of some 40 degrees in one of his original bearings, and this was *not* picked up by the Master, the Second Mate, nor the Chief Mate. It is incredible that such an error could be so perpetuated. Not only was the original discrepancy unnoted, but *no change of either bearings was ever noted.* Yet, the vessel drifted aground, in fair weather with plenty of sea room, and sustained a damage of $200,000.

Death by Asphyxiation

The following incident is an old story of death by asphyxiation when entering a sealed compartment without preliminary airing. This time, three lives were lost.

This casualty occurred on a C-2 type vessel in a European port while discharging a cargo of coal. Number one hold had been cleared. The Chief Mate, together with the Boatswain and two ABs, entered the hold to inspect the two deep-tanks. The deep-tanks had not been used during the voyage and had been tightly sealed to exclude all minute particles of coal. The manhole cover to the starboard deep-tank was the first to be removed.

The Chief Mate, upon directing a flashlight into the tank, spotted a piece of lumber which he decided to remove. He entered the tank and descended the ladder to the bottom. He took a few steps around. Then he started up again. Near the top of the ladder he fell backwards to the bottom of the tank about ten feet below. The boatswain and one AB immediately entered the tank to remove the Mate. The AB started up the ladder with the body of the Chief Mate, but before reaching a point where the second AB could assist, he. fell backwards. The second AB sensed something radically wrong and scurried to the main deck for help.

Several men with an oxygen breathing apparatus, lifeline, stretchers and wrenches arrived at the scene. The second AB entered the tank using a dampened handkerchief across his nose and a lifeline around his chest. He was overcome and pulled from the tank by means of the lifeline, suffering no after effects. The Deck Engineer, using the oxygen breathing apparatus, entered the tank and removed the body of the first AB. After this was done the breathing apparatus oxygen supply was depleted.

The tank top was then unbolted and removed. The Third Mate entered the open tank with a lifeline about his shoulders. He removed the bodies of the Chief Mate and the Boatswain.

It was concluded that the three deaths were not due to negligence or inattention to duty on the part of the Master or any member of the crew other than those who inadvertently met death. The Chief Mate, a seaman with years of experience, should have known the danger that existed in entering a tank which had not been aired. The Boatswain and AB, not realizing the cause of the Chief Mate's collapse in the tank, were overcome in an attempt to assist him.

In appraising this unfortunate incident the Master could only say, "It is beyond my comprehension why a licensed officer with the experience and ability of my Chief Mate, would enter any vacated long-sealed compartment before using the precautions with which he was entirely familiar, of testing it with one of the two Flame Safety Lamps aboard ship."

The lesson to be learned from this accident has been taught many times before: NEVER, NEVER enter any compartment which has been closed tightly for some time, without first checking its oxygen content. Human beings, even mariners, require oxygen for the sustenance of life.

Drowned by Lightning

Acts of God do not always, by themselves, endanger the lives of those on board ship. More frequently than not, the Acts of Man which follow the Acts of God bring misfortune to man himself. This lesson was illustrated recently on a small tanker struck by lightning in a southern east-coast port. Five of the crew members immediately jumped overboard, one of whom was drowned.

The vessel, having discharged a part cargo of gasoline, departed from the oil dock and was en route down river, tank tops and openings properly secured. A heavy rain and an electrical storm were in progress at the time. The Second Assistant Engineer was on watch in the engine room and the Master was navigating the vessel in the pilothouse. At about noon, while less than a mile from the dock, the mate and deckhand entered the pilothouse to relieve the Master. At that instant there was a sharp crackling sound and an explosion. The forward deck and port side of the vessel became engulfed in flames.

The deckhand dashed through the starboard door of the pilothouse, grabbed a life-ring and jumped overboard. The mate stepped out of the port door, ran aft and jumped overboard on the starboard side. The Master stopped outside the port door and pulled the valve to the CO_2 system to the cargo tanks. Thereafter, all flames subsided with the exception of those coming from the expansion trunks at No. 3 and No. 4 tanks just forward of the pilothouse.

The Master went aft and called into the engine room. The Second Assistant Engineer answered from the starboard side of the main deck close by. He informed the Master that all hands with the exception of themselves had jumped overboard and recommended that they do likewise. The Master asked the Second Assistant to stop the engines as the vessel was proceeding at its full speed of six knots. While the Engineer stopped the engines, the Master went forward and dropped the anchor. He then attempted to put out the fire in No. 3 and No. 4 expansion trunks with a portable CO_2 extinguisher, but to no avail.

The Master then asked the Engineer to start the fire pump. The Master noted that directing a stream of water into the expansion trunks only increased the flames. He then directed the water against the forward house, which caused a spray to cover the tank tops, thus extinguishing the flames.

In the water, the deckhand with the life-ring heard his name called by another

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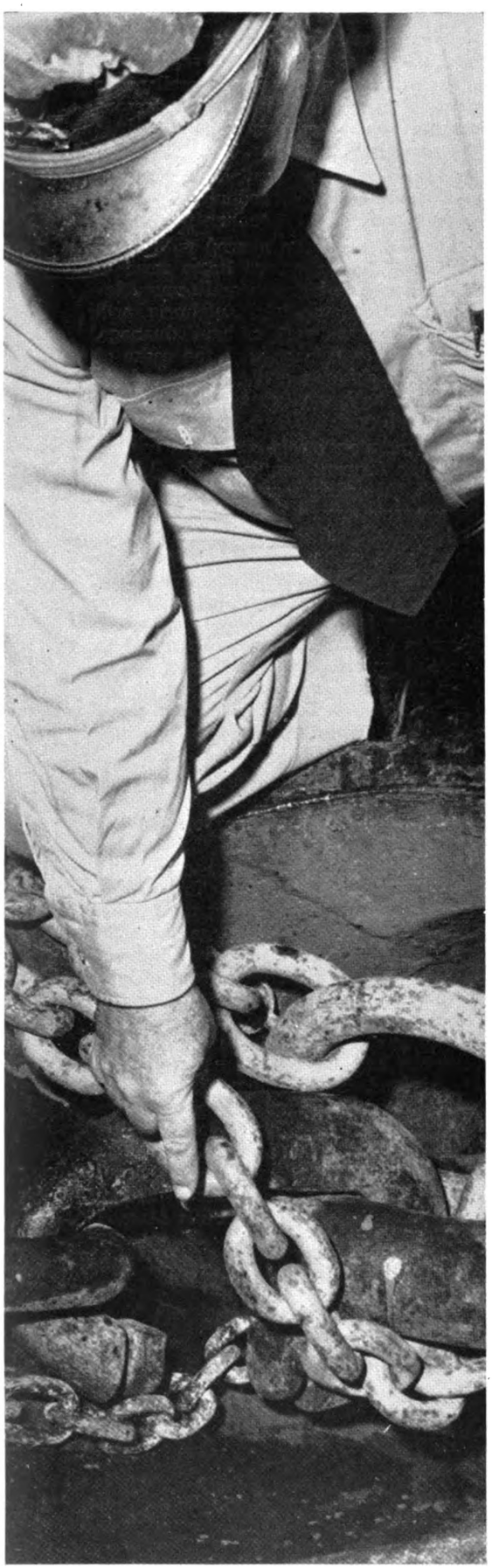

INSPECTION PAYS OFF as in the case of this alert Mate who spotted a broken link in the anchor chain. This ship would also have been "hard and fast" if the Mate hadn't been on his toes.

deckhand, four or five yards away. Unable to swim towards the second deckhand because of the ring around his body, the first deckhand tried other efforts to answer the frantic calls for "help". He was too late; the second deckhand disappeared below the surface. A short while later, a small yacht rescued the four remaining crew members from the water and the Master and Engineer from the vessel.

It should be obvious from the entire incident that the only person who acted wisely was the Master. He is to be commended for his level-headedness throughout. He practically fought the whole fire single-handed. He used good judgment, which not only saved the owner from possible total loss of the vessel, but demonstrated conclusively that the fire-fighting equipment required on such vessels actually fulfills its purpose.

Little can be said in favor of the action taken by the five crew members who jumped overboard. They should have at least hesitated long enough to appraise the casualty and to consult the Master, as in the case of the Second Assistant Engineer. Had they done so, chances are they would have been asked to assist in fighting the fire which might have resulted in an even sooner extinguishment of the fire. It is axiomatic that the longer a shipboard fire is left burning, the more difficult it is to extinguish. The most effective fire-fighting efforts are those initiated immediately after the fire begins.

Contact by lightning is a happenstance. It does not foretell doom, even to a tank vessel, if all those on board act wisely and in accordance with good seamanship.

Keep Those Charts Up-To-Date

After all the many years of marine navigation, no chart has yet been devised which is automatically self-correcting.

In an age harassed by complicated machines and push-button controls, we place compensating mechanisms and automatic safety features on practically every piece of modern navigational equipment, but still the mariner must correct his own charts. Failure to do so leads not only to personal embarrassment, but to the possibility of a major disaster as well.

Quite recently, a seasoned master grounded his vessel near the entrance to a Gulf Coast port. He innocently hauled in on a red flashing buoy (every ten seconds) when he should have made the haul on white flashing light (every ten seconds). Investigation revealed that he failed to keep his charts corrected to date, nor did he consult the latest light list.

Although the vessel grounded easily in soft mud and sustained no apparent damage, it required three tugs to refloat her twenty hours later.

The incident occurred during the wee hours of Christmas morning. The weather was cloudy, visibility hazy, and sea moderate. On a course 67° True, at 13 knots, the master sighted a red light flashing every ten seconds, approximately 2 points on his port bow. Believing this to be the entrance light to his port of destination, he hauled to the left and reduced to half speed, when about 4½ points on the port bow. It was then 2350 Christmas Eve. At 0015, a white light flashing every ten seconds was sighted. Realizing that the first light sighted was not the entrance light, the master attempted to alter course to starboard, but the vessel was aground.

It was ascertained that the master was using a U. S. Coast & Geodetic Survey Chart dated 20 May, 1943, and a second U. S. Coast & Geodetic Survey Chart dated 19 February, 1945. Neither chart was corrected to date. The latest light list and charts (1947) clearly indicated the correct position and characteristics of the entrance light. It was also clearly shown that the master actually turned at a shoal buoy.

There was no alternative but to admonish the master for inattention to duty which resulted in the grounding of his vessel.

The lessons to be learned from this casualty are so obvious they scarcely need explaining. It is difficult to understand how a master would fail to consult the light list prior to entering port and mistake a red light for a white one. Charts and publications must not only be kept up-to-date, but must be consulted when necessary in order to serve the purpose for which they are intended.

"Double-Check" the Steering Engine

Often a minor human oversight can cause considerable delay and inconvenience. Human oversights can go on from day to day and, unless checked by some concrete examples of "lessons learned", can lead imperceptibly to very serious consequences.

A case in point was a T2-type tanker departing in ballast from a northeast coast port for a loading port south. Before she cleared, however, she collided with a crane barge which in turn bumped into a railroad bridge, knocking one span from its foundation into the water below. Investigation revealed the parent cause for the incident to be "steering engine failure". Fortunately, no lives were lost.

Before leaving the dock, the steering gear was tested by the Chief Mate, First and Second Assistant Engineers, in the presence of the Master and the Bar and Tugboat Pilots. In leaving the dock, the quartermaster reported to the Master that the helm was hard right (35°), while the rudder indicator showed only fifteen degrees. The engine room was notified to check the gear as soon as the vessel was able to anchor out of the cable and pipeline area. She was being assisted by two tugs.

While proceeding to anchorage, an attempt was made to swing to the left. It was noticed that the vessel was swinging too slowly. Various speeds were ordered in an endeavor to get vessel to respond to helm, but of no avail. Shortly thereafter, full astern was unable to check headway sufficiently to prevent collision with a floating crane barge alongside a railroad bridge.

After the accident, the steering engine was found to have a by-pass valve opened one half turn on the port motor. This motor was not intended to be in use.

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THESE WERE MEN until they tried to mix sodium nitrate with sulphuric acid, sodium peroxide and potassium chlorate.

The by-pass valve was shut and the gear again worked normally. The presumption was that the valve had vibrated open.

The vessel was equipped with a hydraulic telemotor steering gear having two independent motor-driven pumps. Statements from the engineers revealed that it had been the practice on this vessel and other similar vessels, to operate either pump with the fluid stop valves open on both pumps and the by-pass valves closed. This practice was to facilitate quicker change-over in the event of a mishap to the motor in operation. At the time of the collision, only the starboard motor was supposed to have been running.

There is a possibility that the by-pass valve either (1) worked open due to vibration, or (2) was not shut tight as it should have been. In either case, it is not considered good engineering practice to operate the gear as stated without closing both the by-pass valve *and* the stop valve on the idle motor. Had this been done, in all probability the accident would not have happened.

Here is an example where one human being should have checked another. The representative of the deck department should have checked the representative of the engine department, and vice versa. No one is infallible and for this reason, all test checks, particularly on steering gear apparatus, should be "double-checked", when preparing to leave port.

In the incident in question, six persons were in the steering engine room at the time of the steering gear tests. It could be a case of "too many spoons in the pudding", when one or two might have been more effective. The strong probability of too much conversation and poor illumination could easily—and very humanly—have been the reason for improperly closing the by-pass valve.

Disregard for Dangerous Cargo

Even though dangerous cargo regulations are mandatory only on the navigable waters of the United States, it is expected that officers of U. S. vessels should be aware of such regulations and be guided by them *at all times*, when dangerous cargo is on board. Not to be so guided is evidence of negligence which can lead to death and destruction of crew and vessel. The U. S. regulations for "Explosives and Other Dangerous Articles on Board Vessels" are considered as expert witness to the dangerous nature of certain cargo and to the proper manning of its stowage.

As the result of a grossly negligent manner of stowage of numerous dangerous articles into one hold, No. 2, an American vessel in an Italian port suffered a severe fire and a series of six explosions. The vessel was a total loss and six crew members and one local workman were killed. The Chief Mate and the Chief Engineer were among the crewmen killed.

The vessel departed a U. S. port with a cargo of coal. Upon discharging this cargo at a Northern European port, she proceeded southward to an Italian port, loading at six other ports along the way. At the third loading port, the master, because of ill health, had to be relieved. In discussing relief procedures, the new master together with the old master, concerned themselves with crew and navigational problems, apparently unaware of any dangerous cargo already on board. After the new master took command, additional dangerous cargo was loaded at three other ports. Although this latter cargo was brought aboard with the knowledge of the new master, it was stowed in accordance with "common sense" and not by following any appropriate regulations.

In addition to several miscellaneous items of cargo, the following dangerous cargoes were heedlessly admixtured *in the same hold* (No. 2):

potassium chlorate	sulphuric acid
activated carbon	sodium nitrate
hemp twine	sodium peroxide

The hold was also stowed with locomotives. The dangerous items were in broken stowage between and around locomotive tenders. The sulphuric acid drums were stowed, without dunnage, above and in contact with the casks of potassium chlorate and bags of sodium nitrate. The hemp twine was loaded in the Italian port.

One morning, smoke was seen coming from the forward ventilator No. 2 hold. Shortly thereafter, several lengths of fire hose were directed down the ventilator and water was turned on. Also, the steam smothering system was put into use. The smoke changed color from white to black. Strong pressure and vibrations were then felt on deck, following which a series of six explosions occurred. As the fire spread, the vessel was towed from the dock and run aground in the harbor where it burned itself out. Five days later, she was declared a constructive total loss.

Throughout the investigation it was quite evident that neither of the two masters were fully aware of the seriousness and potentialities of the various types of cargo they permitted to be loaded aboard. They made no effort to appraise themselves of existing regulations for the safe stowage of dangerous articles. The incident is mystified by the fact that the sulphuric acid was sent aboard in unmarked drums. All details for the handling and stowage of the cargo were left up to shore agents who supplied incomplete and inaccurate manifests and cargo plans. Neither master conducted a proper inspection of the cargo before or after it was aboard. Although it can be reasoned that the condition and content of cargo should have been reported by the Chief Mate, it is obvious that he too was negligent, but the Chief Mate is now dead.

HARD AND FAST ASHORE because the Captain, Mate, and Third all took the same anchor bearing—the wrong one.

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CASUALTIES TO VESSELS—FISCAL YEAR 1947

(July 1, 1946 — June 30, 1947)

	Groundings and founderings	Collisions with other vessels	Collisions with miscellaneous objects	Fires and explosions	Damage to lifesaving equipment	Heavy weather and material damage	Totals
Number of casualties	811	545	463	209	68	516	2,612
Number of vessels involved	811	1,140	463	209	68	516	3,207
Gross tonnage of United States merchant vessels	4,206,143	3,684,035	2,387,077	712,587	513,804	3,511,142	15,014,788
Number of inspected vessels	651	630	406	114	68	471	2,340
Number of uninspected vessels	160	510	57	95	.....	45	867
Types of vessels involved:							
Passenger	19	38	17	11	2	21	108
Freight	437	414	258	74	61	324	1,568
Tank	170	150	100	22	3	104	549
Public vessels	1	58	1	.....	.....	1	61
Trooper	3	11	5	1	2	7	29
Ferry	10	14	24	1	.....	6	55
Towing	51	148	39	18	.....	12	268
Fishing	79	58	8	41	.....	29	215
Foreign flag	.....	102	.....	.....	.....	.....	102
Miscellaneous	41	147	11	41	.....	[1]2	252
Persons on board							
Passengers	8,105	7,337	9,726	352	4,826	17,229	45,575
Crew	24,261	18,304	15,400	4,767	3,198	21,333	87,323
Value of property involved							
Vessels	$1,013,779,862	$804,394,936	$576,619,041	$197,991,304	$138,399,000	$841,962,607	$3,573,146,750
Cargoes	$185,478,676	$80,976,572	$60,128,848	$21,848,616	$20,091,642	$119,421,651	$487,945,969
Number of vessels whose value was not reported	31	96	15	12	2	17	173
Number of cargoes whose value was not reported	80	129	44	15	13	60	341
Damages reported							
Vessels	18,849,888	5,143,703	2,972,727	15,875,137	120,450	7,376,616	50,338,021
Cargoes	6,620,385	607,703	57,462	1,413,874	.....	361,925	9,061,349
Vessels not reporting amount of damage	17	62	9	5	2	10	105
Cargoes not reporting amount of damage	12	51	3	7	.....	6	79
Vessels totally lost							
Inspected	23	6	.....	13	.....	.....	42
Gross tonnage	49,476	3,549	.....	41,987	.....	.....	95,012
Uninspected	58	20	4	65	.....	.....	.....
							147
Gross tonnage	6,333	3,676	384	2,155	.....	.....	12,548
Number of casualties due to personnel fault							
Employed under license or certificate	107	95	45	11	5	49	312
Others	55	102	22	.....	.....	12	191
Lives lost in casualties							
Passengers	17	[1]10	.....	7	2	.....	36
Crew	77	[2]19	.....	[3]62	2	.....	160
Assistance rendered by Coast Guard	64	9	5	27	.....	19	124

Deaths not involving casualty of vessel:
- Passengers 58
- Crew 311
- Stevedores 10

Injuries to personnel not involving casualty to vessel:
- Number of personnel incapacitated for more than 72 hours 585

SOURCE: U. S. Coast Guard, Proceedings of the Merchant Marine Council, January, 1948.

[1] Includes 4 men on USAT.
[2] Includes 1 Philippine worker and 5 crew of unidentified foreign craft.
[3] Includes 2 dock workers and port captain, Keystone Tankship Corp., in MARKAY disaster.

The new master was negligent in assuming command of a vessel without sufficient information regarding the vessel's cargo and its manner of stowage. While the old master did not offer to inform him, the new master did not even inquire.

Both masters were charged with culpable inattention to duty by failure to ascertain the nature of the cargo and the prudent measures needed to insure the safe stowage thereof.

It makes no difference whether an American vessel is in U.S. jurisdictional waters or not, dangerous cargoes *must* be stowed with regard to safety. The laws of chemistry express no factor for the locality of a vessel. If the proper dangerous substances are mixed under the proper chemical and physical conditions, an explosion will occur—*no matter where the innocent vessel may be.*

Whatever the actual chemical process which caused the fire and explosion in this incident, there can be no question that the stowage of substances in No. 2 hold was such that many fire hazards existed and the cargo was of such nature as to support combustion and explosion vigorously.

Having clearly demonstrated the disastrous effect of the disregard for dangerous cargo and dangerous cargo regulations, is there any further necessity for repeating the demonstration?

Ad Infinitum

One could go on and on and relate numerous marine accidents from which very valuable experiences have been gained. One could also relate even more numerous accidents from which *no new* experiences whatever, have been gained. But, obviously, such a complete thesaurus of marine casualties is not appropriate here.

From the examples cited, it should be apparent that certain human factors, such as, carelessness, confusion, inattention, ignorance, negligence, disregard, laxity, and even downright laziness prevail in the merchant marine to the detriment of the over-all industry welfare. If we are to improve our merchant marine we must observe these human factors in terms of representative marine accidents. However, once observed, there should be a concerted effort to *avoid costly repetition.*

While the Coast Guard's primary interest in the merchant marine is that of the role of a safety warden, it should be recognized that there is no such thing as absolute safety. At best, all Coast Guard efforts and standards can only be directed towards reducing to a *minimum* the number of marine accidents, without, however, defining what that minimum is. From the theme of the incidents related in this article, it would appear that the minimum number of marine accidents has been superseded the very moment any identical accident has been repeated. So long as the incident brings to attention something new, or some new aspect never before considered, or something which has long since been forgotten, then it could conceivably fall within the category of a "minimum", and is therefore an *inevitable* accident.

It is an old axiom that we "learn from experience." However, we must whittle down the disproportion between useless experience and that which is really useful. In the preventive realm of marine accidents, this can be done by intelligent observation and attention to detail. In so doing, *it is not necessary to repeat marine accidents.*

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Venezuela Company's Antilles Service

The Venezuelan Navigation Company (Compania Anonima Venzolana de Navegacion) recently announced plans for an Antilles shipping service from La Guaira to Mexican ports and New Orleans. Ernesto Deseda Hernandez, president of the company, will make a survey tour of Kingston, Jamaica; Port au Prince, Haiti, Havana, Cuba; Progreso, Veracruz and Tampico, Mexico, and New Orleans to study freight prospects. The announcement said the company intends to use five ships of the state-owned merchant fleet.

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More than 195,000 passengers, 42,000 motor vehicles, and 91,000 tons of freight have been carried by the luxury liner M. V. CHINOOK in her first year of service between Seattle, Port Angeles, and Victoria.

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PRESENT TRENDS IN MODERN TANKER CONSTRUCTION

DESIGN PROBLEMS INVOLVED IN CONSTRUCTION OF OUR NEW TANKER FLEET

By ROBERT W. MORRELL*
Marine Consultant

The current program of seagoing tanker construction in the United States consists of some 64 vessels now under contract, totaling over 1,400,000 deadweight tons. These tankers range in size from the 7,800 ton deadweight tanker the RIO GRANDE, building for Texas Oil Co. at Ingalls Shipbuilding Corporation at Pascagoula, Mississippi, to the 30,000 ton deadweight tanker, BULKPETROL, launched September 25th for National Bulk Carriers at Welding Shipyards, Inc., at Norfolk, Virginia.

These tankships may be grouped into six classes, by tonnage, as follows:

(1) One ship of 7,800 tons deadweight, mentioned above.

(2) Four ships of 16,500 tons deadweight each, to be built at Bethlehem-Sparrows Point Shipyard for A-C Tankers Company, to go on bare-boat charter to Standard-Vacuum Oil Company. The tankers of this group are of the T3-S-A1 type, with some modifications.

(3) Four ships of approximately 18,000 tons deadweight each, building at Sparrows Point for foreign interests. Two of these, the OLYMPIC GAMES and ATLANTIC PRINCE, have been launched. This 18,000 ton class is a development of the T3-S-A1 hull design, lengthened by one tank space and with 6″ more depth. One of the four has machinery practically duplicating that in the previous T3's.

(4) Twenty-six ships of approximately 26,000 tons deadweight (on designed draft) each. Fourteen of these are for Standard Oil Company of New Jersey; four at Sun Shipbuilding & Dry Dock Co.; ten at Newport News Shipbuilding & Dry Dock Co. Two are for Gulf Oil Company, at Sun. Seven are for Tankers Navigation Company, at Sun, to go on bare-boat charter to Socony Vacuum Oil Company. Two at Chester, are for Sun Oil Company. One, at Newport News, is for foreign interest.

(5) Twenty-four ships of 28,000 tons deadweight each; fourteen at Sparrows Point and ten at Quincy. Four of these are for Gulf Oil Corp., four for Texas Co.; five for a subsidiary of Standard Oil Co. of California; five for Atlas Tankers, Inc., and the balance for various U.S. and foreign interests.

(6) Five ships of 30,000 tons deadweight each; two at Norfolk, and three at New York Shipbuilding Corporation, believed to be of this tonnage.

In addition to these tankers for which contracts have actually been placed, other 30,000 ton ships are contemplated, and the bids have been received for the National defense type which is specified as 29,500 tons deadweight on 36′-9″ summer draft.

With such a volume and variety of new tanker tonnage in view, analysis of the various characteristics, and the lines of thinking of the respective owners, as reflected in these several tanker types, provides an extremely interesting study.

Service

Considering first the trades in which these vessels are intended to operate, the smaller tankers, namely the 7,800 tonner and the four of 16,500 tons, are for special trades. The latter or T3 group is to operate in the Far East, including Persian Gulf loadings.

The 18,000 ton group appears to be built for world-wide trading. The larger tankers, although suitable for general service, were widely contracted for with the intention of bringing crude oil from Middle East or Persian Gulf ports to the United States, and that particular service has considerable influence upon most of the recent tanker design.

The National Defense tankers are designed for the dual function of serving as Naval auxiliaries and of engaging in commercial trade. Persian Gulf loadings and Suez Canal transit are factors in this design problem as well.

Size

The trend in tanker design over the past several months has been toward increasingly large vessels, up to current construction of 30,000 deadweight tons. The advantage in unit cost of transportation, on a given run, for the larger ships is illustrated by the fact that the estimated cost, Kuwait to New York, is about $1.20 per barrel in the new 28,000 D. W. class versus $1.30 for the well-known T2-SE-T1 tankers, both operating under the same respective conditions as to fixed charges, voyage, cargo, bunkers, flag, etc.

This incentive has led to building up to the limit of dimensions and proportions of draft, length and beam suitable for the available port facilities, according to judgment of the owners and operators concerned, for present and future operations. If port conditions in general improve in the future sufficiently to accommodate larger tankers, we shall probably see them built. The size of the tankers has apparently struck a balance in which the number of ports they can enter, fully loaded, is a governing factor. This is affected by depth and width of channel, tide, berthing conditions, and storage capacity, at the various ports; also dry docking.

Draft

Probably the major factor in developing the design of big tankers is the draft allowable in the various ports under consideration. The tendency is to select such maximum draft and then produce the best possible carrier on that draft. This is apt to result in the biggest ship obtainable on the fixed draft, within the limits of good proportions and well-selected coefficients. In relation to this, the fact that none of the big tankers has any deadrise is significant.

Although the draft when loaded to international summer freeboard is generally adopted as the criterion for deadweight in negotiating shipbuilding contracts and operating charter-parties, this has some interesting vagaries in the recent field of design.

Reference has been made to the influence of Persian Gulf-U.S. trade in tanker design. An example of this appears in the selection of draft. The limit of draft in the Suez Canal is 34 feet. On the voyage from Persian Gulf to a U.S. port north of Hatteras, the vessel is permitted under Load Line Regulations to load to tropical draft in the Persian Gulf, but must not exceed summer draft during certain months in the Arabian Sea, nor winter draft in the Mediterranean for certain different months, nor winter draft in the North Atlantic for certain additional months.

These restrictions have to be applied to the design and operating cost estimates for big tankers, in conjuction with the consumption on each leg of the loaded voyage. The net result of the calculations is that the 26,000 ton D. W. tanker, for average year-round operation, can load 2¼″ deeper than her summer draft. Her maximum draft at the Suez Canal will be ½″ less than summer draft, and maximum draft arriving at a U.S. port about 12½″ less than the summer draft. These differentials are also approximately true for the 28,000 and 30,000 ton types.

The proper loading draft varies for different months, but the above average for loading draft indicates the summer draft,

*Presented before the Marine Engineering Panel at the American Merchant Marine Conference, conducted by The Society of Marine Port Engineers, New York, N.Y., Inc.

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for design purposes which will permit the maximum cargoes to be loaded, under the stated conditions.

It should also be noted that because of the long voyage, by the time the ship arrives at the discharging port she will draw about 20″ less than her loading draft, due to consumption. Therefore, when considering the discharging ports which will accommodate the proposed vessel, we are not dealing with summer draft nor loading draft nor Suez draft, but something considerably less.

On the other hand, if the discharging port has fresh or brackish water, that feature must also be considered.

The 26,000 ton D. W. class was originally designed for 26,000 tons D.W. on 32′-0″ summer draft (keel). Later, because of special consideration in the contemplated service, the design was changed to provide 26,000 tons D.W. on 31′-5″ molded draft. The summer draft remains very nearly the same, as the D.W. on summer draft is about 26,650 tons. There have been other modifications in some of the vessels of this class, but the above is the basic condition.

The drafts of the other types under construction or contemplated are stated in an attached tabulation.

Length

Usually length BP and load water-line length are predominant dimensions in design, but in the development of the big tankers length overall has become a controlling factor. Port information has been searched as to the maximum length which can be handled as to berth conditions and turning the ship around, also as to dry docking. In the 26,000 ton class of tankers, LOA is 628′-0″; in the Bethlehem 28,000 ton class it is 623′-0″; in the 30,000 ton type now building it is 629′-8″ and will be 641′-8″; in the National Defense tankers it is about 648′. This is a drastic increase over the 523′-6″ of the T2 tankers.

The LOA and LBP are closely related as to length of overhang, and the LBP has a very definite relation to the summer draft. The tendency has, therefore, been to adopt the greatest length consistent with port conditions and good length-to-draft ratio, to obtain the maximum carrying capacity.

Depth

With the summer draft fixed, the molded depth is also practically fixed as that which will provide the necessary freeboard assignment and a proper length-depth ratio. The freeboard, however, is also affected by sheer, camber, length and height of erections, and block coefficient. Modern tanker design has practically dispensed with upper deck sheer. The subject of tanker depth and sheer is complicated by considerations of construction cost, freeboard, erections, and loading stresses; and it may be that the best overall solution has not yet been found.

The current length-to-depth ratios of the big tankers range from 13.5 to 14.3 For the T2 tankers it is 12.78.

Beam

The molded beam adopted is generally the greatest which will retain good proportions in relation to length and depth. In the big tankers it has reached 84 feet. The limitations for beam have also required consideration with respect to shipways, draw-bridges, canals, and dry docks.

The big tankers have length to beam ratios of from 7.26 to 7.42. American Bureau Rules require special consideration of scantlings if the beam exceeds 0.1 L plus 20 ft. All of the tankers in the present program exceed this limit slightly, which again reflects the desire for cargo capacity. However, the beam is less than twice the depth in all of the large tankers.

Fineness

The fullness or fineness of hull form, as expressed by the block and prismatic coefficient, is related to the speed-length ratio. The tendency in the big tankers has been toward slightly fuller coefficients, in this relation, than before. This reflects an attempted balance between the conflicting desires for higher speed versus maximum cargoes, applied to bigger bulk carriers than have been previously designed. These recent designs have obviously succeeded in reducing the operating cost, per barrel, very materially; and it is believed that the solution of these design factors, for ultimate economy, still presents opportunity for development.

The feature of fineness of lines is closely related to speed and power as well as to carrying the pay load. Before discussing the propulsion, however, it is best to look at some of the hull features.

Welding and Riveting

The tankers now building are of welded construction except for certain riveted connections. In the all-welded war-built tankers, hull failures have occurred which have a direct relation to the longitudinal strength of the hull. These failures affected only a small percentage of the total number of tankers built, but were sufficiently serious to establish the requirement for riveted arrestor-straps on all the war-built welded deep-sea tankers. It also caused very careful consideration to be given to this problem in designing the new and and bigger tankers. The result is that all the tankers in the present program will have more or less riveting of longitudinal members.

The extent of this riveting ranges from the minimum of a gunwale bar and a bottom-shell arrestor strap each side to the maximum of four deck seams, the gunwale bar, lower sheer strake seam, upper and lower bilge strake seams, and the flat plate keel to be riveted, as well as angle-bar connections of two keelsons to bottom shell and two girders to deck, each side. This maximum is adopted on some of the 26,000 D.W. ton type. The 16,500 and 18,000 ton tankers have no gunwale bars, but on each side two deck seams and four or five side shell seams are riveted.

For the 28,000 ton ships riveting is specified to include each side one deck seam, gunwale bar, lower sheer strake, both bilge strake seams, and one bottom shell seam.

On several of the big tankers, the welded seams and butts of deck and shell are to be given low-temperature stress-relief treatment.

American Bureau has adopted rules which govern the chemical as well as physical properties of hull steel, with a view to obtaining a quality best adapted to welding.

Bulkheads

The war-built tankers have fluted bulkheads; in the T2's the corrugations are horizontal; in the T3's the transverse bulkheads have vertical corrugations.

In the T2's, cracks have developed in the transverse bulkheads, mainly at the toes of horizontal tripping brackets of vertical web stiffeners. These failures do not seriously impair the structural strength, but they have been troublesome. Where they occurred they have been reinforced, and only in rare cases has failure recurred in the same place. In a couple of instances the vertical webs have buckled, with no apparent bottom damage.

In the T3 tankers, the troubles have been less pronounced and of a different nature. The T3's now building, and the 18,000 ton tankers of similar construction, have fluted bulkheads with improved structural details. The Bethlehem 28,000 ton class will have similar fluted bulkheads. Likewise the 30,000 tonners at Norfolk.

In the 26,000 ton type building at Sun and Newport News, the bulkheads are of flat plate construction, with stiffeners. The big National Defense tankers are so specified.

There is divergence of opinion among designers and operators on this subject,

U. S. TANKER CONSTRUCTION — OCT. 1948

D W (Summer)	7,800	16,500	16,500	16,750	18,000	18,000	26,650	26,966	28,000	30,000	30,900	29,500
Builders	Ingalls	Spar. Pt.	Various	Various	Spar. Pt.	Spar. Pt.	Sun & N.N.	Sun	Beth.	Weld'g	Weld'g	
Owners	Texas	A-C Co.	U.S.N.	Various	Foreign	Foreign	Various	Tankers Nav.	Various	Nat. Bulk	Nat. Bulk	
No. of Ships Bldg.	1	4		3	1	19	7	24	1	1	1	
LOA	402′-6″	501′-7½″	523′-6″	523′-6″	542′-0″	542′-0″	628′-0″	628′-0″	623′-0″	629′-8″	641′-8″	648′ (?)
LBP	385′-0″	487′-6″	503′-0″	503′-0″	524′-0″	524′-0″	600′-0″	600′-0″	595′-0″	615′-0″	621′-6″	623′-0″
Beam, Md.	62′-6″	68′-0″	68′-0″	68′-0″	68′-0″	68′-0″	82′-6″	82′-6″	84′-0″	84′-0″	83′-9″	83′-0″
Depth, Md.	21′-7½″	37′-0″	39′-3″	39′-3″	37′-6″	37′-6″	42′-6″	42′-6″	44′-0″	43′-9″	43′-6″	46′-6″
Draft, des., Md	17′-7½″	29′-10½″	30′-11⅛″	30′-11⅛″	29′-8″	29′-8″	31′-5″	31′-5″	33′-0″	33′-4″	33′-2″	32′-0″
Draft, Summer Keel,	17′-3½″	30′-0½″	30′-2″	30′-2″	29′-9⅝″	29′-9⅝″	32′-0″	32′-5″	33′-11″	33′-5½″	33′-3½″	36′-9″
SHP, Normal	2,800	7,000	10,000	6,000	5,500	7,000	12,500	12,500	12,500	16,000(?)	16,000(?)	9,400
RPM, Normal	130	85	106	90	100	85	112	112	100			
Speed (Note 4)	11½	15½	16½	14½ (N)	15¼	16 (N)	16 (N)	16				16 (N)
Notes			(1)	(2)								(3)

Notes: (1) Mission Type Tankers, T2-SE-A2
(2) T2-SE-A1 Tankers } For Comparison
(3) National Defense Tankers, T5-S-DU 1
(4) Speed is Specified Speed on Trial, Loaded; for types marked (N) it is at normal SHP.

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TANKER TO CARRIER TO TANKER . . . Reconverted by Alabama Dry Dock & Shipbuilding in Mobile, the SS SANGAMON began the third part of a gallant career for the Hillcone Steamship Company, San Francisco.

from standpoints of weight, maintenance, and tank cleaning.

In some quarters, it has been claimed that the bulkhead leaks are due to the cargo tanks being too long. The tank length in the T2's is 36′-6″; in the new big tankers it is 39′-4″ to 42′-6″. If the bulkhead failures were mostly in the upper portions, it would be significant; but such has not been the case in the T2's.

In some of the big tankers, the upper strakes of bulkhead plating have been increased above Rule scantlings; mainly to provide against corrosion.

Cargo Handling

The cargo tank capacity of the 26,000 ton class is 230,000 bbl. and for the 28,000 ton class it is 240,000 bbl. For the Persian Gulf-U.S. trade, large cubic capacity is not necessary as the crude is about 26.2° A.P.I. gravity or 7.47 bbl. per ton, and the long-voyage bunkers limit the cargo D.W. However, for world-wide trade, in which these vessels may engage sooner or later, space is desirable for gasoline cargoes on shorter voyages. The best combination of cargo and bunker capacity has been an interesting problem.

Main cargo piping is of rather uniform design, consisting of three systems serving three groups of tanks, quite similar to that in the T2 tankers.

Main cargo pumps are installed up to 4,000 GPM each. Some of the new tankers have three pumps, some four, of this size. The cargoes can be discharged in about 10 hours. Turbine-driven cargo pumps have been adopted to a large extent, and have introduced some nice problems in the steam, exhaust, desuperheating, and condensing conditions. The pumps in nearly every case are centrifugal, in an after pump room, driven by extended shafts from the engine room.

The arrangement of stripping pumps and lines differs widely in the various ships as to number, size and drive of the pumps and as to the number and connections of the pipe lines. A few of the new ships also have stern discharge lines. Although little or no heating is required for the Persian Gulf crude, most of the new ships are being fitted with cargo heating coils. Oil separators and drain coolers for heating coil returns have been adopted in some cases.

Miscellaneous Features

The Persian Gulf requirements have caused special consideration to be given to tropical conditions, affecting ventilation, heat insulation, refrigeration, lubrication, and heat-exchange equipment. Dehumidifying apparatus is also under consideration.* It is believed that all the new deep-sea tankers will be equipped with radar.

Propulsion

Except for the relatively small tanker building at Pascagoula, which will have twin-screw unaflow engines, the entire U.S. tanker program will be powered with single-screw geared turbine drive.

The 16,500 ton class at Sparrows Point will have 7,000 normal SHP machinery similar to the previous T3 tankers, designed for 85 normal RPM.

Three of the four 18,000 ton tankers for foreign account will have Victory Ship machinery. The fourth will have machinery similar to the T3's.

All of the 26,000 ton class building at Sun and Newport News and the 28,000 ton class building by Bethlehem will have main propulsion units of 12,500 normal SHP at 112 RPM and 100 RPM respectively.

*Editor's Note: See the September issue of The LOG —"Cargocaire Tanker System Cuts Maintenance Cost 80%."

(Continued on page 44)

From Tanker to Carrier To Tanker

After reconversion from flat-top to tanker at the Alabama Dry Dock & Shipbuilding Co., Mobile, the ss SANGAMON is now on the third part of her career for the Hillcone Steamship Company, San Francisco.

Joining the great fleet of oil-carriers operating throughout the world, the SANGAMON enacted the role of a prewar tanker when owned and operated by the Standard Oil Co. (New Jersey) as the ESSO TRENTON.

Built for the Standard Oil fleet as one of the largest American tankers, the ship was 525 feet long, 75 feet across the beam, and 39 feet deep, with a draft of approximately 30 feet. The tanker's carrying capacity was 147,150 barrels.

The SANGAMON was required for another use in the early years of World War II and then the second part of her log was written when after conversion to an aircraft carrier for the U. S. Navy, the great vessel earned the distinction of being one of America's "fightin'est ships."

The four SANGAMON class CVEs (escort aircraft carriers) were known in the Pacific, where they rolled up their enviable combat records, as the "Old Indispensables." Decommissioned October 24, 1945, the SANGAMON was stricken from Naval Registry, her officers and crew honored by the President of the United States with the Presidential Unit Citation.

J. J. Coney, vice president and general manager of the Hillcone Steamship Company, whose company purchased the SANGAMON early in 1947 and arranged for reconversion to her former classification as a tanker at Addsco, stated the war name of this ship was retained in order to "perpetuate a great ship's identification." The West Coast shipping official asserted:

"The name of this tanker and others of Carrier Division 22 when operating in the Pacific as ships of war were collectively known as 'names the Japs learned to reckon with the hard way.' It is our purpose to retain this colorful name otherwise than in the log and history of the ship."

Reconversion of the SANGAMON at Addsco consisted of the removal of carrier-type accoutrement such as landing decks and hangers, reconstruction of super-structure, repairs to damaged sections which were the result of the dive of a Jap suicide plane in the Battle of Leyte Gulf, and other repair work and outfitting required for classification as a commercial tanker.

"This is a job of which we are quite proud," said John M. Griser, president of Addsco, "as throughout the shipping world there is always the greatest of admiration for ships that bear names synonymous with unusual accomplishments. This—the SANGAMON—is certainly one of those distinguished vessels."

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STEAM AND DIESEL

COMPARATIVE OPERATING DATA

C1A Diesel operated $25,000 annually less than C1A Steam vessels over same routes.

*By STANLEY M. LeCOURT**
Research Engineer
Mississippi Shipping Co., Inc.

There has been some reluctance on the part of the American Flag operators to accept the Diesel engine as an economical and reliable means of deep sea propulsion. Some of the objections usually stated are the higher cost of Diesel fuel, the premium wages paid to Diesel engine crews, and higher maintenance cost. Unless all of these factors are properly weighed and a comparison made under certain conditions the true picture cannot be painted. Most figures of comparison on engine performance are those submitted by experts in the mechanical engineering field and are to a certain extent purely theoretical. Invariably, these theoretical comparisons show the steam-turbine power plant out front in economy. A comparison which may be used as a true measure of value is one that makes use of actual operation cost figures on ships of the same size, design and horsepower and running in the same trade. The comparison which I will present is based on the actual operation of C1A design Diesel and steam-turbine ships of 4,000 horsepower owned by the Mississippi Shipping Company, operated on the same trade route and calling at the same ports. Theory will not be referred to.

In January 1947, the Mississippi Shipping Company was awarded the right to operate ships on a trade route between the United States Gulf ports and the ports of North Brazil and the West Coast of Africa. It was then necessary to purchase three ships to service this route, and, additionally, they required three more vessels in the existing trade between the United States Gulf ports and the East Coast of South America as far south as Buenos Aires. After careful consideration of the types of ships offered in surplus by the Maritime Commission, the management decided to purchase six C1A Diesel vessels. The company was only able to buy five Diesels, all of the remaining C1A Diesels that were offered had been grabbed by foreign operators. The required fleet of six C1A's was completed by the purchase of a C1A steam-turbine vessel. The first C1A Diesel was placed in operation during April 1947.

Comparative Costs— Steam and Diesel

After some 14 months of operation, a study was made of the operating costs of the six C1A vessels. Data from log books and accounting department records were tabulated to determine the comparative cost of fuel oil, lubricating oil, wages and maintenance and repairs. These major items of operating costs are directly influenced by the type of propulsion machinery employed.

In that period, the five Diesel ships completed a total of 11 voyages. The steam-turbine ship made three voyages. The average port to port distance of the Diesel ships' voyages was 14,492 miles; the turbine ship, 13,304 miles. The average time in ports per voyage was 1,010 hours for the Diesels and 1,094 hours for the steam ship. The Diesel ships spent an average of 122 hours in pilot waters, the steamer spent an average of 143 hours in pilot waters.

At the time the study was made we were paying $3.40 per barrel for the Diesel fuel and $2.51 per barrel for bunker "C" for the turbine ship. The average cost of fuel per mile at sea (between pilot stations) was $1.318 for the turbine ship and only $1.154 for the Diesel ships. The fuel cost per mile, port to port, was $1.337 for the steamer and $1.157 for the Diesels. In port, the steamer's fuel bill was $2.885 per hour and for the Diesels, $1.241 per hour. On a total voyage basis, the fuel cost per cubic-ton of capacity per mile was 0.141 mills for the steamer and 0.113 mills for the Diesel ships. The turbine ship has 117 cubic-tons capacity more than the Diesel ship.

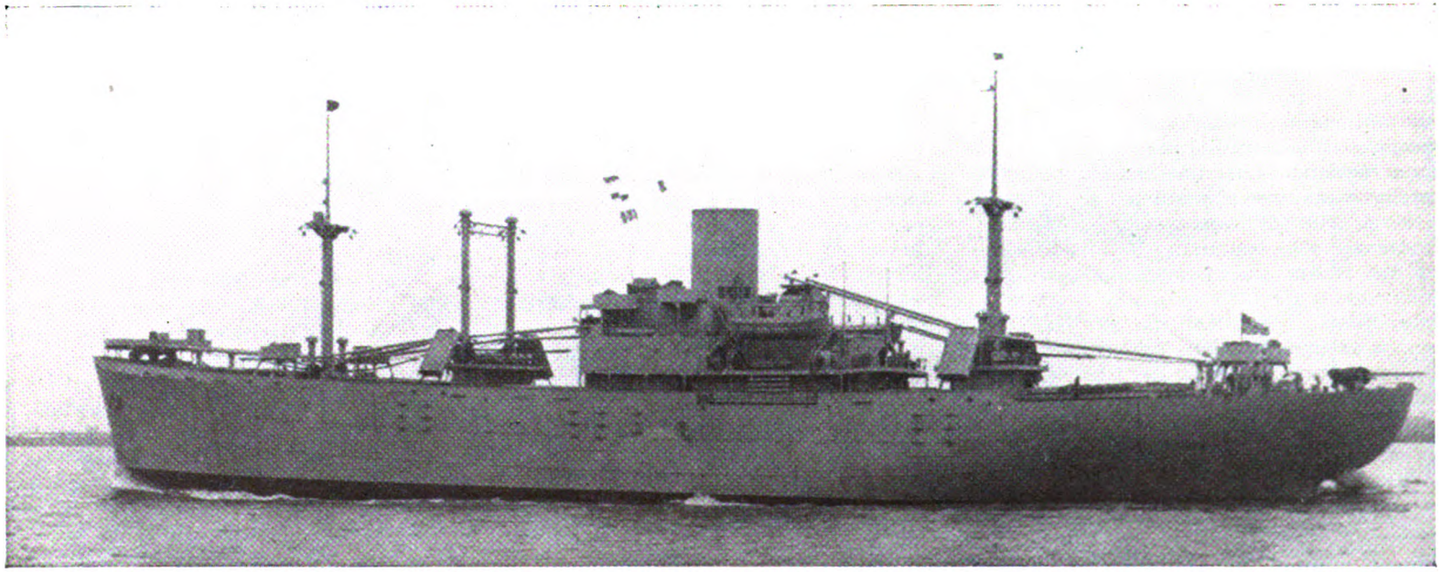
Total Wages on Diesel Ships Lower

One of the Diesel ships, after completing three voyages, was fitted with a new propeller of lesser diameter and pitch. At the end of the first voyage with the new wheel, it was found that the fuel consumption was reduced by 5.25%. This voyage was not included in the study.

The lubricating oil consumption on

**Presented before the Diesel Engine Panel at the American Merchant Marine Conference, conducted by the Diesel Engine Manufacturers Association.*

SIX SURPLUS SHIPS OF THIS TYPE—C1A—were purchased from the Maritime Commission by the Mississippi Shipping Company.



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Diesel ships is very high as compared to the turbine ship. In fact, in dollars it is better than ten times more. The records show that the Diesel engines use $8.90 of lube per day against the turbine's low figure of 85 cents per day.

As for wages, it is true that the engine department crew demands premium pay on the motorship over and above the same ratings on the steamship of the same power-ton class. At the present time on our Diesel ships the licensed engineers, from the Chief to the Fourth Assistant, receive a total aggregate monthly premium of $259.53 over the monthly base pay paid to the five licensed engineers on the steamer. The three oilers receive a total premium of $63.00.

However, there are 46 men in the crew on the steamer and 43 men on the Diesels. The total monthly payroll, not including overtime, for the steamship is $272.01 more than the monthly payroll on the Diesels.

The overtime payroll for the Diesels has averaged $103.14 per day. The turbine ship's overtime averaged $113.20 per day, a few cents more than $10.00 per day over the Diesels.

In addition to the payroll difference, it is to be pointed out that three men less in the crew means a saving of approximately $180.00 per month in subsistence costs.

The last item of study, the one which usually causes most concern to the operators, is maintenance and repairs. The figures supplied by the accounting department for the maintenance and repairs chargeable to the engine department reflect an average per day cost of $40.00 for the Diesels and $48.00 for the steam-turbine vessel.

The maintenance and repairs costs chargeable to the first voyage of each of the six ships was disregarded due to the fact that all expenses in connection with placing the ships in first class condition were charged to the first voyages.

Diesels Operated More Economically

The major repairs on all twenty of the Diesel engines in the five ships are handled by the regular engine room crews. The boilers and turbines are always opened and repaired by outside shops.

In summarizing the operating cost, all figures were reduced to a typical voyage of 13,000 miles between ports, 1,000 hours in ports and a round-trip time of 80 days.

For this typical voyage, the cost for fuel oil, lube oil, wages, maintenance and repairs charged to engine department and subsistence show a difference in operating cost of $5690.16 in favor of the Diesel powered ships. This difference amounts to $25,605.72 annually.

Another factor which makes this difference more attractive is the fact that the Diesel ships, with the same full load draft as the turbine vessel, can carry some 380 tons more pay load taking into consideration the steamer's 183 tons heavier deadweight capacity.

From this study of actual cost figures, we can safely state that the Diesel powered ocean cargo ships have proven more economical, and, from our observations over the period of 18 months operation on maintained schedules, they are reliable.

⚓ ⚓ ⚓

DIESEL ENGINES IN OCEAN GOING TANKERS

Operating Problems of Large Diesel Units in the Tanker Fleet

By CHARLES L. BOYLE*
Manager, Marine Department
Sun Oil Company

The history of Diesel engines in the American Merchant Marine is a well known and heavily debated subject, with the advocates of Diesel engines for main propulsion usually on the defensive. It is a regrettable fact that most operators prefer steam for propulsion and this is just as true for tanker as for cargo or passenger ship operators. It is only fair to the tanker operators to elaborate on the reasons for their antipathy to Diesel propulsion. First of all, tankers operate on an exacting schedule these days, with twelve hours or less in the loading port and sixteen to twenty hours in the discharging port. This leaves very little time for engine maintenance by the ship's crew. Further, with multiple grades of crude carried for different purposes in the refinery, it is often important that the vessel make her scheduled run in the average estimated time, barring fog and storms. Delays on the voyage otherwise can be very embarrassing to refinery operators awaiting a particular type of crude. Considering that prior to World War II most large Diesels for main propulsion were of a foreign manufacture with few exceptions, operators were often embarrassed by inability to procure prompt replacements for damaged or worn out parts, and with the advent of war were faced with the necessity of having their own patterns and castings made.

With this background, we can proceed to review the basic and immediate difficulties operators encountered in the operation of Diesel engines. Fuel costs for Diesels were and continue to be a much higher than bunker "C" fuel for steam ships, and much of the advantage of lower fuel consumption of Diesels over steam was lost in the final fuel bill.

Personnel Key to Diesel Problems

Skilled personnel, both licensed and unlicensed, to operate Diesel engines is the prime requisite to economical and efficient operation, yes, even successful operation. To the best of my knowledge there has never been an abundant supply of *skilled* Diesel engineers. In my opinion, this has been the underlying cause of more dissatisfaction with the Diesel engine than anything I know. It also explains why foreign operators have found Diesel installations profitable, because they have an adequate supply of experienced and skilled engineers. The most appropriate remark I ever heard in this respect was made in the course of a discussion between an old-time Diesel engineer and an operator of a large company, who was criticizing Diesel engines. The operator was stopped by the engineer when he said, "Any Diesel engine is just as good as the man that is running it."

Systematic Maintenance

Maintenance of Diesel engines is a port function, and when the port time of a tanker is considered it becomes a problem, but one that can be solved rather easily. Since 1936, the crews of tankers have been granted varying periods of relief while in port, from twelve to twenty hours or more. No Diesel engine can be operated successfully without a systematic and scheduled program of maintenance—call it preventive engineering if you will. Without such a program for checking bearings, pistons, lubricators, and cooling system, operators face the inevitable breakdowns at sea and in port.

Aligned with scheduled maintenance is the necessity of maintaining an adequate stock of spare parts for the engines. Inability to procure necessary parts required for continued operation of a vessel has many times resulted in reflections against the engine itself. Operators will find it excellent insurance to maintain their own stock of essential parts which experience indicates to be most commonly required. While the inventory costs may seem undesirable, the benefits derived warrant the investment. The same can be said for steam installations, so this is not a problem alone for Diesel operators.

You will often hear criticism, particularly from the operating personnel, relative to the weights of the various parts handled in the course of overhauls. Engine builders can do much to give this matter proper attention by reduction of weights where possible and consistent with good engineering principles.

Before proceeding with a discussion of our company's approach to the problems enumerated heretofore, I might pause to

(Continued on Page 42)

**Presented before the Diesel Engine Panel at the American Merchant Marine Conference, conducted by the Diesel Engine Manufacturers Association.*

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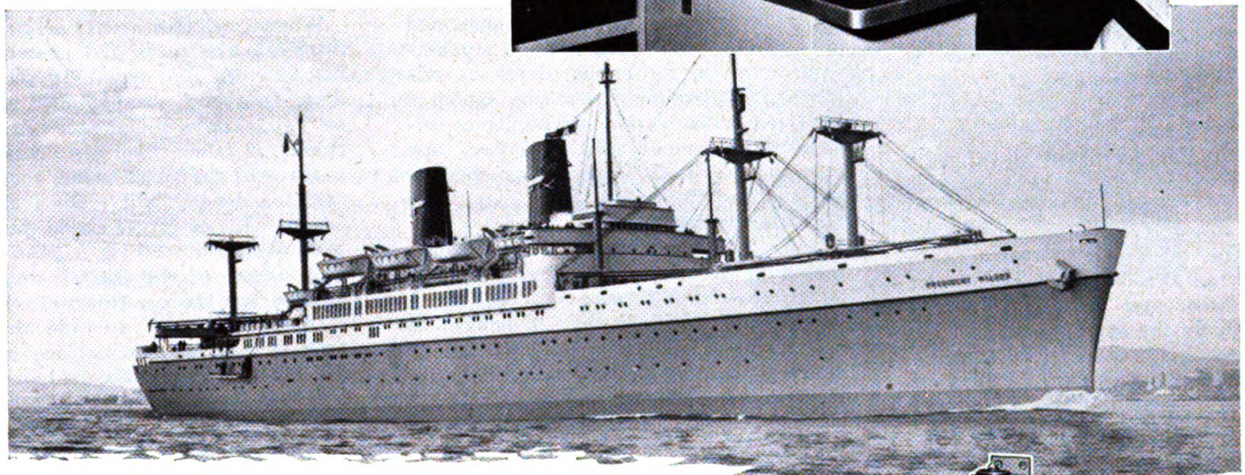
Says Captain of S. S. President Wilson

"No ship can be rated modern without a Fathometer . . . it is indispensable on a Liner the size of the President Wilson."

Captain A. O. Pierson



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Diesel Engines in Tankers

(Continued from page 40)

say that I am leaving to the engine manufacturers the discussion of fuel consumption, weights and costs of Diesel engines as compared with the steam installations. This subject has been ably presented by them in previous panels and meetings.

Twenty-five Year Old Diesel Still Efficient

The company with whom I am associated operates both Diesel and steam ships. Our oldest Diesel propelled ship, equipped with 2600 H.P. Doxford engines in 1923 and still in operation, is still giving excellent service and operating at its original designed efficiency. Our largest Diesel propelled ships are equipped with 8250 S.H.P. engines. The results of operations of our Diesel fleet for the past twenty-five years justify defense of the Diesel propelled tanker as an efficient, reliable, and economical unit to operate.

In view of the previously cited difficulties, it is in order to present some of the counteracting measures adopted to maintain the engines at their most economical and efficient condition.

To overcome the disadvantage of higher Diesel fuel costs, centrifuging and heating equipment were installed in conjunction with proper size of fuel tips and changing of engine timing to permit the use of bunker "C" fuel in the engines. This was accomplished in both the main and auxiliary Diesel engines, consequently only one grade of fuel is carried—"bunker C". This change was made in 1934 and even throughout the war we didn't find it necessary to revert to the use of Diesel fuel oil. No maintenance problems were occasioned by the change-over, and liner wear and piston ring service were relatively the same.

Lest there be skeptics among us, let me say that many of our purchases of bunker "C" fuel have been made from other companies. Checking the specifications of bunker fuel available at an Arabian loading port recently convinced us we could burn same in our Diesels. While we set the desirable viscosity limits at 85 Say. Furol/122°F., we have burned fuel with a viscosity as high as 105 Say. Furol/122°F. Conradson carbon and sulphur in the average run of bunker "C" usually do not exceed the 5.0% maximum and 1.5% sulphur limits respectively.

Maintenance Crews in Port

Prior to 1936, the ship's crew performed the normal routine overhaul of bearings, piston rings, lubricators, fuel pumps and valves, etc., leaving the replacement of liners and heavier work for shipyard overhaul periods. In 1936, the policy of relieving the ship's crew while in the home port was inaugurated and in order to carry on the maintenance work a crew of maintenance men was recruited from ships' personnel to service all vessels as they arrived in the home port. This group became so proficient in their duties that practically all shipyard overhaul work on the engines was eliminated, and in addition this group became expert in trouble shooting any difficulties experienced with the engines. In addition to the main engines, the shore maintenance crew overhauls all auxiliaries that are required for service underway, such as coolers, lubricating oil pumps, circulating water pumps, air compressors, etc. To give you some idea of the efficiency obtained, the replacement of main engine cylinder liners for an 8250 S.H.P. engine has been made repeatedly by this crew in a matter of twenty - twenty-four hours. Most of these men can also qualify as experienced operators in addition.

This system of voyage overhaul, without delaying the ship, also eliminates long and costly overhaul periods in the shipyards, which some operators have advanced as a disadvantage of Diesel installations. It is my opinion that this group is in a large degree responsible for the successful operation of our Diesel engines.

Procurement of skilled personnel still remains the most pressing problem. There are so many details in the daily operation of a Diesel that an engineer must know to be proficient in his work, that it really takes years for him to acquire the experience, unless a system of training engineers is inaugurated to accelerate his knowledge. It is most desirable that engineers be selected from the unlicensed personnel and their practical experience augmented by schooling and assignment to a maintenance group for engine overhaul, adjustment and trouble shooting. Given a relatively stable supply of intelligent unlicensed personnel with ambition, any operator can train them for prospective engineers.

Fuel Consumption

Aside from the above points, the Diesel propelled tanker presents a very definite advantage in fuel consumption, which when coupled with the use of heavy oils can mean considerable savings to the operator not only in the total cost of fuel, but increased cargo carrying capacity in any run. Further increased cargo carrying capacity is offered by a Diesel propelled ship, in the reduction of tons of reserve feed water required, particularly when the waste heat gases from the engine exhaust are used to generate steam for heating and operation of steam pumps at sea. Savings in port, particularly the loading port, can also hardly be ignored, in the reduction of standby losses.

Much can be said for the reliability of Diesels. What amazed our port engineers most was to observe the Diesel engine pumping a well outside their hotel window in California, week after week, with no attendant and a daily replenishment of the lubricating oil and fuel supply. Through the war, Diesel ships whether they be tankers, submarines, or cargo ships, gave every evidence of outstanding performance and dependability under adverse conditions.

Rugged Diesels

To illustrate this point specifically with a few actual experiences, I would like to relate the story of one of our large tankers torpedoed and set afire in July 1943. This ship was equipped with a 7500 S.H.P. Diesel and three 500 H.P. auxiliary Diesels. The crew was forced to abandon ship when the fire got out of control. Some thirty hours later the ship was sighted by a Naval air patrol and the pilot was puzzled by smoke rings being emitted from the stack. When the crew reboarded the vessel two days later with fire fighting equipment, they found two of the auxiliary Diesel engines still operating despite the fact that fire had wreaked considerable damage aft. The ship was made ready with a small amount of repairs at Key West and came north under her own power steering from aft.

Another 2800 S.H.P. Diesel driven tanker, loaded with fuel oil for delivery to Pearl Harbor, and while in transit of the Panama Canal, discovered the crankshaft was broken. Within a few days the ship was on its way to Pearl Harbor delivering its much needed cargo, because it was possible to box the broken crank section with plates and channels to make a temporary repair satisfactory to American Bureau requirements. Permanent repairs were made some two months later.

Another case of a twisted three throw crank section running very eccentrically was overcome by removing the connecting rods, releasing the bearing caps and proceeding north to the discharging port with its cargo some 1600 miles.

When a cylinder breaks or a rod bends, dismantle the parts and proceed on the voyage with the remaining three cylinders. Or even if two cylinders fail, return on two. Those statements are not ridiculous or fancy, they are actual experiences over the years. What more can be said for dependability, when the Diesel comes home or forges ahead despite such breakdowns.

The Future of the Diesel Engine for Ocean Tankers

It seems hardly credible that Diesel tankers will not find a place among the big tankers being designed, particularly for long voyages to the Arabian ports where fuel and water consumption and cargo carrying capacity are so much more important than on the short coastwise run. What you can dispense with as bunkers leaving an Arabian port for United States can be carried as extra cargo. Even from the angle of fuel conservation in the interests of national economy, Diesels merit some consideration. Further, what competition can American steam propelled tankers offer foreign operators with ships of similar design and Diesel propelled? At the present time, Diesel propelled American tankers are trading those waters. If the Diesel engine builders will develop and offer American ship operators an engine that will burn bunker fuels and demonstrate its practicability, one of the operator's major objections will be silenced.

With the advancements made during the war, in coupling multiple engines to the drive shaft, and the flexibility of operation obtained thereby, advantage can be taken of higher speed Diesel engines and reduction of weights in the individual engines. Such an installation also affords the opportunity of increasing the shaft horsepower without increasing the en-

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Diesel Engines in Tankers

(Continued from Page 42)

gine-room space or the size of the engine as would be occasioned by the installation of a single large engine directly connected to the propeller. Consideration, from a national defense angle, should also be given to twin screw Diesel installations with separate engine rooms and compartmented oil and water spaces adjacent to the shell. It is a conceded fact, that a tanker is completely defenseless against either a collision or a torpedo in the engine room space.

If economy of operation can be achieved with Diesels by other large segments of industry and transportation, most certainly that same economy can be and has been achieved in their use on ocean going tankers.

Tanker Construction

(Continued from page 38)

The 28,000 ton tankers at New York Shipbuilding Co. are understood to be intended for higher power, probably 18,000, but the particulars are not yet available.

The 30,000 ton tanker at Welding Shipyard, Norfolk, is understood to have 16,000 normal SHP; likewise the one to be built.

The National Defense tankers are reported to be designed for a maximum of 20,000 SHP, giving an estimated speed of 20 knots at 32 ft. draft. The normal commercial condition seems to be 9,400 SHP at 16 knots.

In the development of the big tankers, the limit of horsepower per shaft was given consideration. Opinion has apparently been unanimously in favor of single-screw drive. At first, the adoption of 12,500 normal SHP (13,750 maximum) on a single shaft was in question, but we now have the 20,000 SHP of the Defense tanker design.

All of the tankers will have two water-tube boilers each, except the Defense tankers which have three. The T3's and the 18,000 ton class use 450# working pressure and 750° F. total temperature, normal. Some of the 26,000 ton tankers have 600# and 800° F. with single-stage feed heating; the others of this size have 850# and 850° F. with four-stage heating. The Bethlehem 28,000 ton class has 600# and 850° F.

The big tankers all have economizers and most of them have air heaters.

Steam atomizing oil burners are being adopted to a limited extent.

Speed-Power

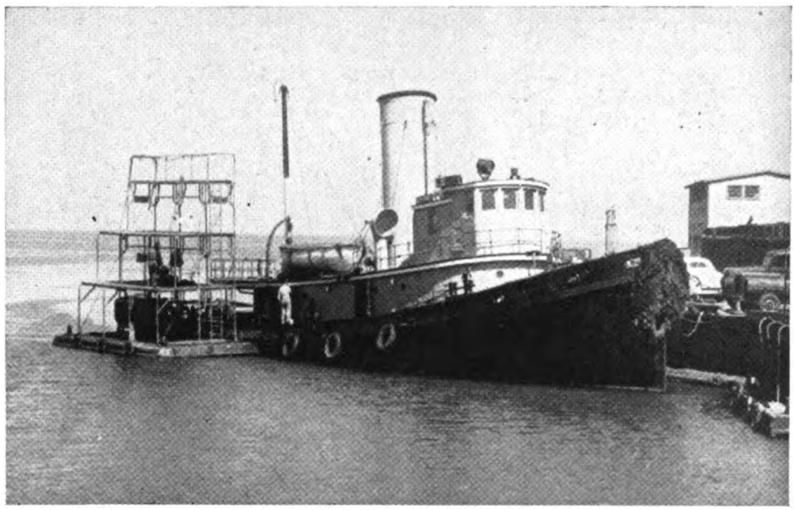
The 26,000 ton and 28,000 ton types at normal SHP of 12,500, will have trial speeds, loaded, estimated at 16.3 to 16.5 knots, representing speed-length ratios of 0.65 to 0.665, based on LWL. The 30,000 ton tankers building at Norfolk will have more power; the estimated speed is not available. Seventeen knots for these ships would represent a speed-length ratio of about 0.682. Compared with this, the war-built T2-SE-A1 tankers had a designed speed-length ratio of 0.65, and the Mission type had 0.74. The more recent designs, therefore, indicate no particular trend as to speed and power. Likewise, the relation between speed-length ratio and prismatic coefficient follows no consistent curve in the current tanker program.

The present tanker program has to a large extent been governed by practical expediency. There was a sudden and in most quarters, unforeseen demand for new tanker tonnage and for early deliveries of same. Preliminary designs were adopted without opportunity to develop or analyze them as fully as could be desired. Existing designs were duplicated or modified to suit owners' varying requirements to meet a new set of conditions. This applies to characteristics both of the hull form and of the machinery installation.

Conclusion

In spite of the urgent demands for quick action, it is apparent that the designers in this country have done a splendid job in an unexplored field in producing efficient bulk oil carriers of sizes hitherto undeveloped. This has presented many new problems which it is believed have been dealt with successfully.

Above all, the tanker program has been of invaluable national service in providing a substantial volume of high-class activity for shipbuilding personnel and facilities, and the manufacture of ship equipment. This is a vital national asset which the tanker industry has held intact and which the nation can ill afford to allow to disintegrate.



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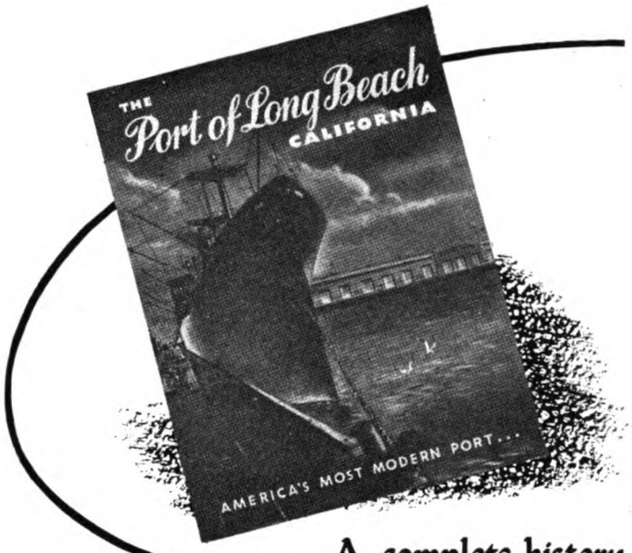

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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

San Francisco Engineers Hear Discussion on Lubrication

F. J. Hanly of the California Research Corporation, Richmond, California, gave a discussion at the October meeting of The Society of Port Engineers, San Francisco, on the paper "Lubrication of Main Propulsion Power Plants Aboard Ship"* which he and E. F. Griep of the Standard Oil Company of California delivered a few months ago before the northern California section of The Society of Naval Architects and Marine Engineers. Mr. Hanly's talk was illustrated by slides.

At the November meeting of the San Francisco society, on the third of this month, John Leslie of the Leslie Company, Lyndhurst, N. J., will give the engineers pointers on valves.

It was announced at the October meeting that an application for membership had been received from Major Perry Edwards, military superintending engineer of SCAP at Yokohama. Major Edwards formerly was with the Army Transport Corps at San Francisco.

Announcement was made, too, that plans for a Christmas dinner dance had been cancelled. Instead, a stag cocktail party will be held.

**This complete paper was run in the February and March, 1948, issues of The LOG.*

SAN FRANCISCO PORT ENGINEERS . . . Top row left to right: F. J. HANLY, California Research Corporation, speaker of the evening; HERMAN J. BIHLER, Standard of California; JOHN de la TORRE, Bethlehem Steel Co.; J. H. (HAM) MINNICK, Shell Oil Co.

Second row, left to right: JOE CHECK, USAT; W. W. FELL, Worthington Pump & Machinery Corp.; CHARLES T. McCLELLAN, Radiomarine Corporation of America; BOB FOX, The Texas Co.

Third row, left to right: facing camera, ERIC C. JOHNSON, West Winds, Inc.; GEORGE LIENHARD, Nordberg Mfg. Co.; JOE BREWSTER, West Winds, Inc.; at right of table, RUSS SCHNEIDER, and BILL HALL, General Electric Co., JACK RYAN, De Laval Steam Turbine Co.

Fourth row, left to right: ALBERT H. ZINKAND, Tide Water Associated Oil Co.; E. M. McLACHLEN, Union Oil Co.; LANCE HARTJE, Imperial Oil Co., Toronto, Canada; A. D. JOHNSON and T. E. DYSON, General Petroleum Corp.

Moore & Co. Discusses Steam Power with Seattle Group

Using as background for discussion the talking motion picture "Steam Power For American Sea Power," produced by Babcock & Wilcox Company, engineers with the Seattle office of C. C. Moore and Company described steam boiler design and construction, production and operation before the September meeting of the Society of Port Engineers of Puget Sound. Speakers included C. A. Hulsart, David Harris and L. Juricha of C. C. Moore and Company.

Presentation of the program followed a similar program at the July meeting of the Society of Port Engineers, Columbia River area.

New members in the Puget Sound group were announced as follows:

Richard C. Black, supervising engineer, General Electric Company; Philip M. Lucas, surveyor, Army Transport Service; John J. McGarry, surveyor, Army Transport Service; Leonard A. Peeler, surveyor, U. S. Maritime Commission; Carl D. Singer, port engineer, Westinghouse Manufacturing Company.

Recorded was the change of duty of J. D. Clarke from McGinitie and McDonald as marine surveyor to inspection engineer with Sundfelt Equipment Company. Late in September members were mourning the passing of charter member Neil McCullough, port engineer, Puget Sound Navigation Company, who succumbed to a heart attack on September 22.

Portland Engineers Continue with Educational Programs

With Basil D. McLean, principal surveyor, American Bureau of Shipping, handling the lead role, the history, membership and operation of classification societies were discussed at the September meeting of the Society of Port Engineers, Columbia River Area.

Declaring that the classification societies

(Continued on page 53)

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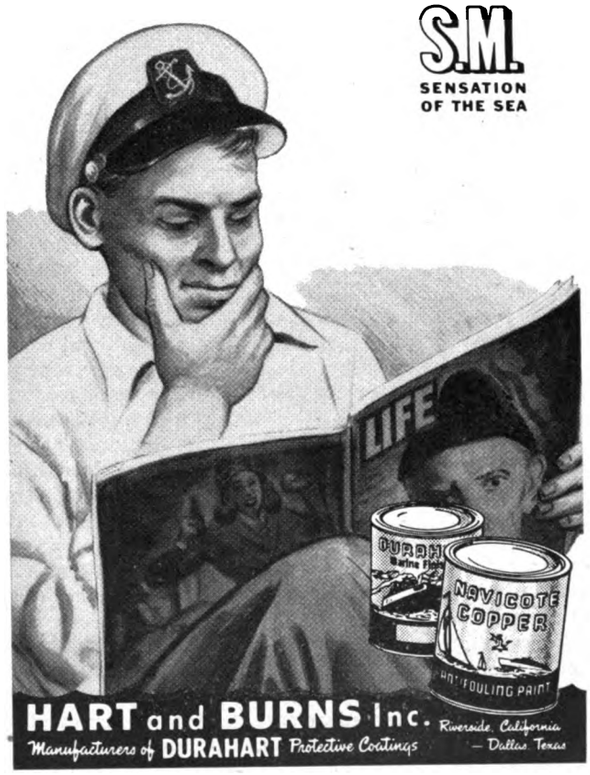

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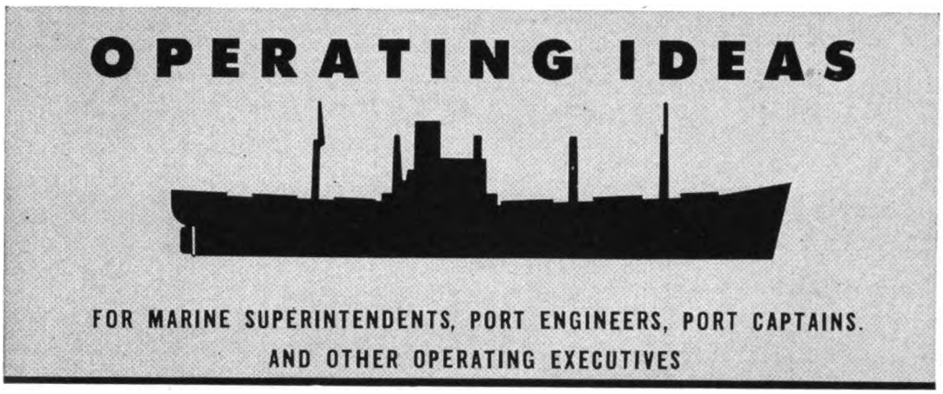

Safety at Sea Conference--Effect on Ship Design

By EDWARD V. LEWIS
Naval Architect
George G. Sharp

International standards of safety of life at sea were advanced along several lines by the Conference which met this summer in London. Although the convention which was adopted there will not go into effect until 1951 after being ratified by the necessary number of nations, the standards which have been set up are of interest to all those concerned with ship design and operation. In addition to the major advances, there are a great many modifications which serve merely to bring the 1929 Convention up-to-date with modern good practice.

General

The topics covered by the new Convention are generally as follows:

Chapter I. General Provisions
Application, definitions, surveys, certificates, control and investigation of casualties.

Chapter II. Construction
Subdivision, damaged stability, electrical installations, fire protection, means of escape and steering gear.

Chapter III. Life Saving Appliances, etc.
Lifeboats, davits, buoyant apparatus, drills and miscellaneous life-saving equipment.

Chapter IV. Radiotelegraphy and Radiotelephone.
Application, watches, technical requirements.

Chapter V. Safety of Navigation
Danger messages, meteorological services, ice patrol, etc.

Chapter VI. Carriage of Grain and Dangerous Goods
Grain cargoes, dangerous goods.

Annex B
Regulations for Preventing Collisions at Sea.

An interesting feature of the new convention is the inclusion of requirements for cargo ships in each chapter. Although rules for cargo vessels are given in our own U.S. Coast Guard regulations, only radio and certain minor requirements were included in the 1929 convention. During the conference several European countries advocated that cargo vessels be permitted to carry more than 12 passengers, a proposal that was opposed by Great Britain and the United States. The final decision was to make no change in the present definition of a cargo ship.

In this article it is proposed to discuss some of the significant differences between the 1929 and the 1948 conventions, comparing them with United States standards as embodied in the U.S. Coast Guard rules. Portions of the Convention dealing with subdivision, stability and related topics will be covered here, and other important regulations will be dealt with subsequently.

Damaged Stability

One of the most significant technical outcomes of the 1948 conference was the inclusion in the convention of a regulation on Stability of Ships in Damaged Condition, applicable to all passenger ships. Previously the matter had been dealt with only to the extent of restricting longitudinal subdivision which might cause heeling in the event of damage. The need for regulations on the subject has been recognized for some time because of a number of cases in which ships have been lost as a result of insufficient stability. However, it has been difficult to obtain agreement on specific rules for international acceptance.

The new regulation 7 of Chapter II sets up a standard which is generally similar to that followed by the U.S. Coast Guard. It does not attempt to give details as to methods of calculation nor to provide for any means of regulating operating stability other than requiring that full data be supplied for the guidance of the master.

Calculations are to be made to ascertain that in the worst anticipated service conditions as regards stability there will be sufficient GM to enable the ship to withstand the final stage of flooding of any one main compartment. If the required factor of subdivision is 0.5 or less, the above condition is to be met with any two adjacent main compartments flooded. Assumptions to be made regarding extent of damage, permissible angle of heel and permeabilities are stated. Surface permeabilities are to be taken the same as for volumes, instead of 10% greater as has been customary in this country, with generally somewhat lower requirements under the convention as a result. No heel due to negative GM is to be permitted except in unusual circumstances, when a heel of 7 degrees may be permitted. Special consideration is required to be given to decks and longitudinal bulkheads which seriously restrict the flow of water. Where special cross flooding fittings are provided, suitable information concerning their use is to be furnished. The master of the ship is also to be supplied with the data necessary "to maintain sufficient intact stability under service conditions to enable the ship to withstand the critical damage."

As in the past there is a requirement that every passenger ship (unless a sister ship) is to be inclined to determine the position of its center of gravity. This requirement has now been extended to apply to cargo ships as well, and such information on stability "as is necessary to permit efficient handling of the ship" is to be supplied to the master. This cargo ship requirement is in excess of the present U.S. Coast Guard rules.

The new regulations in Chapter IV covering the carriage of grain cargo also have an important bearing on the matter of stability, since they endeavor to reduce the likelihood of shifting cargo.

Subdivision

The standard of subdivision as obtained from the Criterion of Service Numeral and Factor of Subdivision in the 1948 convention remains unchanged from the previous Convention and is in agreement with the U. S. Coast Guard rules. The principal change in the convention is the standard for passenger ships on short international voyages. Such a voyage is defined as one "in the course of which a ship is not more than 200 miles from a port or place in which the passengers and crew could be placed in safety, and which does not exceed 600 miles in length between the last port of call in the country in which the voyage begins and the final port of destination." This category applies particularly to the various European cross-channel and North Sea voyages. The object of the new regulations is to require at least a two-compartment standard of subdivision for all ships which are permitted by Chapter III to carry less lifeboats than will accommodate all persons on board.

The following other changes apply to all passenger ships. Unless otherwise noted, they represent advances over the present U. S. Coast Guard rules as well.

Assumed length of damage for calculations. Increased from "10 ft. plus 2% of the length" to "10 ft. plus 3% of the length or 35 ft., whichever is the less."

Airports. All airports below the margin line are now required to be of a locking type, whereas previously this requirement applied only to those below a certain level.

Watertight doors. The type of door which closes by means of a dropping weight has been excluded.

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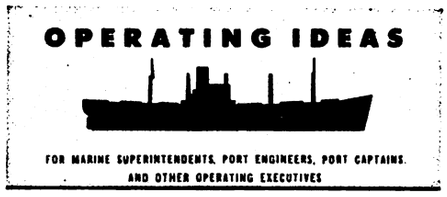

Bilge pumps. In ships having a criterion numeral of 30 or more, an additional bilge pump is required (as in the U.S. Coast Guard rules.) A new provision states that a submersible type pump is not required if "the pumps and their sources of power are so disposed throughout the length of the ship that under any condition of flooding which the ship is required to withstand, at least one pump in an undamaged compartment will be available." (See the accompanying engineering article.)

Miscellaneous Provisions

In considering regulations for providing the greatest possible safety against foundering or capsizing, any measures which reduce the likelihood of accident or help to make aid more speedy are of the highest importance. An example of this is a new provision of the Regulations for Preventing Collisions at Sea which provides (under Rule 28) for an optional warning signal in a situation where a number of collisions have occurred in the past. Whenever a ship which is required to maintain course and speed is in doubt whether sufficient action is being taken by another vessel to avert collision, it may give a warning signal of 5 short blasts on its whistle.

The recommendations attached to the convention encourage the development and installation of radar and other electronic aids to navigation, both ashore and aboard ship. But it is emphasized that such devices are merely aids to the master and do not relieve him from his responsibility to keep adequate lookouts posted, to reduce speed in conditions of poor visibility and to follow all of the other rules of safe navigation. There have been a surprising number of collisions between vessels, one or both of which were equipped with radar.

Another safety step is the requirement that a radio direction finder be installed on all vessels over 1600 gross tons instead of on large vessels only. (This is an advance over the U. S. Coast Guard rules also).

In Chapter IV, a number of important modifications have been made to the radio requirements, as follows:

Small cargo vessels of 500-1600 gross tons are now required to have either a radio or radio-telephone installation.

The requirements for a continuous watch on the radio distress frequency have been extended to cover all passenger vessels (formerly only over 3000 gross tons) and all cargo vessels over 1600 gross tons (formerly only over 5500 gross tons).

Two qualified radio operators are now required instead of one on ships carrying over 250 passengers on voyages over 16 hours in length.

There are numerous improvements in the technical requirements for all radio equipment.

The most important provisions affecting subdivision and stability have been discussed here. The topics of greatest significance to be discussed next month are the new regulations regarding fire protection and the modifications to the requirements for lifesaving equipment.

⚓ ⚓ ⚓

Probable New Regulations Bilge Pumping Arrangements

The recent International Conference on Safety of Life at Sea held in London from April 23rd to June 10th, 1948, for the purpose of drawing up a new convention to replace that signed in London in 1929 will without doubt, after ratification by this country, require some revision of the current United States Coast Guard regulations. One of the subjects affected that will be of interest to marine engineers is that of bilge pumping arrangements on passenger vessels. The current regulations regarding bilge pumping arrangements are not clear on several points or are conflicting, and it is believed that the adoption of the new International Convention will help in clearing many issues.

The following is therefore given to describe the principal differences between the current regulations and the new convention.

By ROBERT P. GIBLON
Marine Engineer
George Sharp

U.S. Coast Guard Regulations

The U.S. Coast Guard "Load Line Regulations" paragraph 46.38 (a) states: "Where two or more independent power pumps are required the arrangements shall be such that at least one power pump will be available for use in all ordinary circumstances in which a vessel may be flooded at sea. One of the power pumps shall, therefore, be an emergency pump of a reliable submersible type. A source of power situated above the bulkhead deck shall be available for this pump in any case of emergency."

International Convention Regulations

The new International Convention Chapter II, Regulation 17 (b) reads: "On ships 300 feet or more in length or having a Criterion Numeral 30 or more, the arrangements shall be such that at least one power pump is available for use in all ordinary circumstances in which a ship may be flooded at sea. This requirement will be satisfied if—

1. One of the required pumps is an emergency pump of a reliable submersible type having a source of power situated above the bulkhead deck, or—
2. The pumps and their sources of power are so disposed throughout the length of the ship that, under any conditions of flooding which the ship is required to withstand, at least one pump in an undamaged compartment will be available."

Both of the above regulations apply to new passenger vessels and to cargo vessels that are converted to passenger vessels. The first part of the above Coast Guard Regulations and the International Convention although they read differently both mean the same for the Coast Guard Regulations state further that at least two independent power pumps shall be installed in all vessels where the length is 300 feet or more or where the Criterion Numeral is 30 or more. The last part of the two regulations is different since the latest International Convention does not require a submersible bilge pump to be fitted on all passenger vessels but will permit it to be omitted if the disposal of the pumping equipment is arranged as required by subparagraph (2). For example if a vessel is so designed that it will remain afloat if any two compartments are flooded and if three bilge pumps are distributed in three different compartments and also if they are so installed that each one will be operable if the other two compartments containing bilge pumps are flooded then the use of a submersible pump is not required and obviously not needed. The latter requirement will however, affect only the larger sized vessels that are fitted with three (3) or more major machinery compartments. Smaller vessels containing a combined boiler and engine room or one separate engine and one boiler room will not be involved.

The above change will also affect the U.S. Coast Guard "Load Line Regulations" paragraph 46.38 (a) the last subparagraph of which reads: "All distribution boxes, cocks and valves in connection with the bilge pumping arrangement shall be in positions which are accessible at all times under ordinary circumstances. They shall be so arranged that in the event of flooding the emergency bilge pump may be operative on any compartment. If there is————." The International Convention has changed the second sentence of this paragraph to read: "They shall be so arranged that, in the event of flooding, one of the bilge pumps may be operative on any compartment." This later change was required to cover those passenger vessels that are not required to have submersible bilge pumps.

Bilge Suction Regulations

Another important change is that in-

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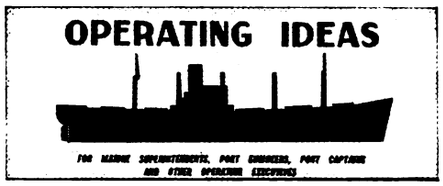

volving the clarification of the regulations regarding independent bilge suctions. The current U.S. Coast Guard "Marine Engineering Regulations" paragraph 55.10-5 (c) states: "The number, location, and size of bilge suctions in the boiler and machinery compartments shall be determined by the officer in charge, Marine Inspection, in the district where the vessel is being built when the piping arrangement is submitted for approval and shall be based upon the size of the compartments and the drainage arrangements. One of the independent bilge pumps shall have a suction of a diameter not less than that given by formula (2) for the engine room bilge, entirely independent of the bilge main, and on ocean-going passenger vessels each of the independent bilge pumps shall have a suction from the compartment in which it is located.

The U. S. Coast Guard "Load Line Regulations" paragraph 46.38 (a) covering this same subject reads: "Each independent power bilge pump shall be capable of giving a speed of water through the main bilge pipe of not less than 400 feet per minute, and it shall have a separate direct suction, to the compartment in which it is situated, of a diameter not less than that of the bilge main. The direct suctions from each independent power bilge pump shall be arranged to pump from either side of the vessel."

The new International Convention Chapter II, Regulation 17 (f) (1) reads: "Each independent power bilge pump shall be capable of giving a speed of water through the bilge pipe of not less than 400 feet per minute. Independent power bilge pumps situated in machinery spaces shall have direct suctions from these spaces, except that not more than two such suctions shall be required in any one space. The Administration may require independent power bilge pumps situated in other spaces to have separate direct suctions. Direct suctions shall be suitably arranged and those in a machinery space shall be of a diameter not less than that of the bilge main."

The U.S. Coast Guard in interpreting their rules usually referred to the "Load Line Regulation" in lieu of the "Marine Engineering Regulations" since the "Load Line Regulations" conformed with the "International Convention" of the year of 1929. A comparison therefore of the "Load Line Regulations" and the new International Convention shows that the requirements have been relaxed to some degree. For example a vessel fitted with three independent bilge pumps each located in a different compartment would be required to install a port and starboard independent suction for each pump under the current "Load Line Regulations" or a total of six independent suctions. If the new "International Convention" rules are applied it may or may not be necessary to install a total of six independent suctions since if one of the pumps is located in a compartment that is not a machinery space, for example in a small recess in the shaft alley, the administration may not require a separate direct suction to be fitted to this pump. Also the "International Convention" rules do not require two independent suctions in each machinery space but only require that not less than one and not more than two are required in any one space.

Other changes of a minor nature were made to the "International Convention" rules, however, these changes were made in an attempt to clarify existing rules rather than change their intent.

Location of Bilge Main Omitted

It seems to us that one important feature that was omitted from the "International Convention" was that involving the location of the bilge main close to the shell where it might be damaged in case of collision and thus render the emergency bilge system inoperative. For example, if the bilge suctions are led to a machinery space and connected to the bilge main in this space by means of a deck operated valve, then if the bilge main is located in the outboard one fifth of the breadth of the vessel (which is not prohibited), a casualty in this region would prevent using the submersible bilge pump to pump out adjacent compartments that may be leaking.

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The Cunard White Star liner, QUEEN MARY, carried a total of 78,648 passengers between New York and Europe during her first year of postwar service from last August to this August.

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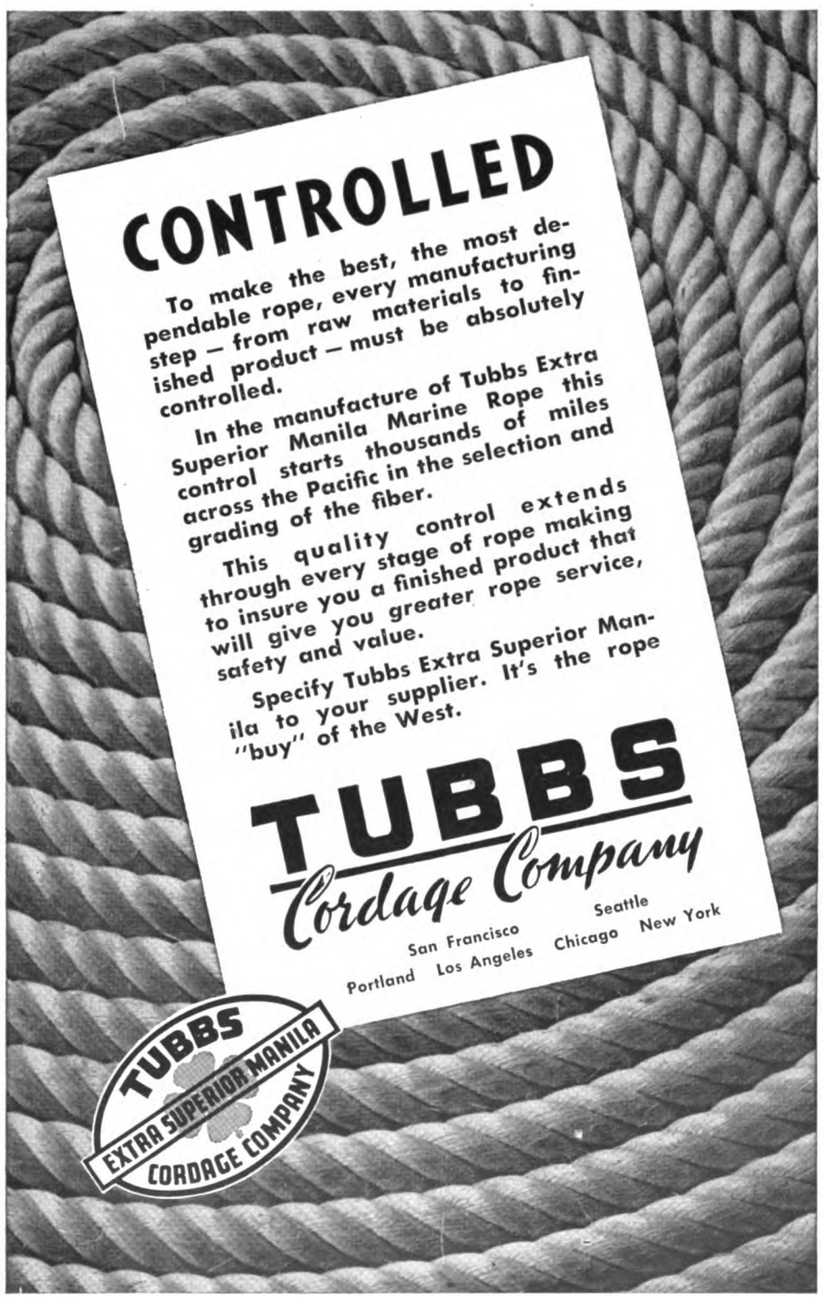
About 70 cents of every dollar spent in New Orleans and its surrounding areas is the result of port activities.



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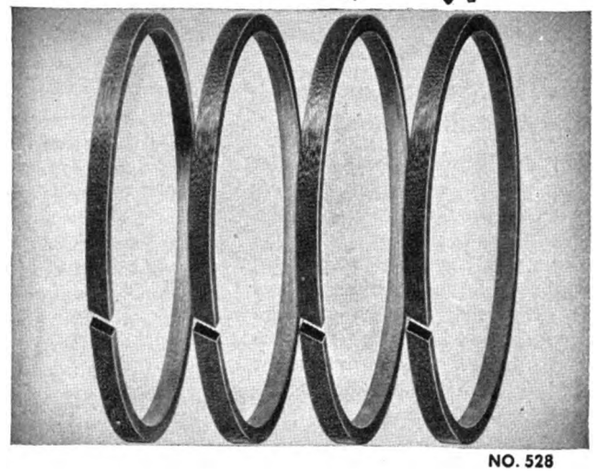

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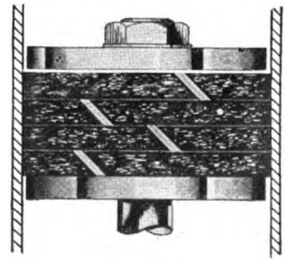

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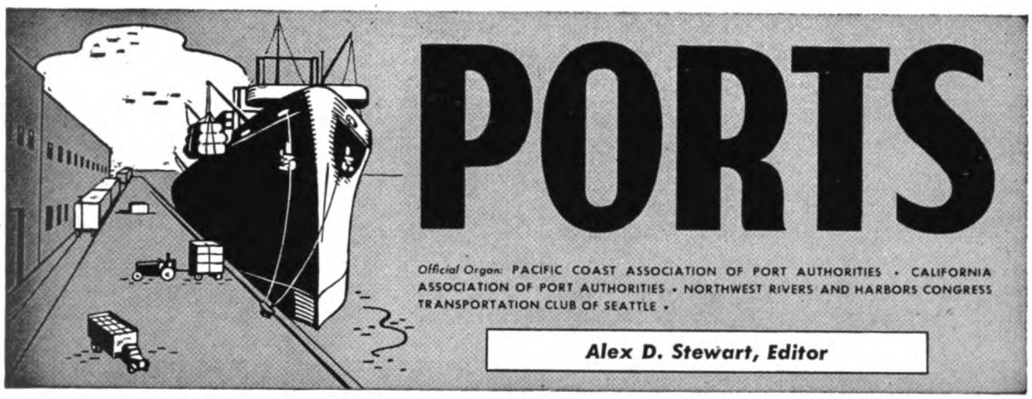

NY Steamship-Motor Carrier Bureau Reports Progress

The Steamship-Motor Carrier Bureau of New York, Inc. was organized October 1, 1947 for the express purpose of smoothing out and expediting all pier-truck operations. Since its inception much has been accomplished in curing the delays to trucks at steamship piers along the New York waterfront. Each interest has learned of the other's operating problems. Cooperation has been remarkable, criticisms have become constructive.

The bureau functions on the theory that once a fault is discovered and pointed out to either offending party corrective steps can quickly be taken to avoid such happenings in the future. To assist in this direction, the bureau has formulated and widely distributed a "Code of Practice" as a guide to both water and motor carriers in pier-truck procedure.

The bureau, now nearing the end of its first year of operation, is optimistic, and feels that its activities have worked no miracles, but have made real progress, and that trucking delays along the crowded New York waterfront have been materially lessened. There is agreement between the truck men and the steamship men that complaints arise from both sources—that some of the delays can be corrected on the piers and some in the handling of trucking.

In the next year there will be an effort to standardize as far as possible the methods of handling trucks at the piers. There has been some disparity in interpreting the phrase "adequate help" on a truck, and while this cannot be completely standardized, some progress can be expected in making sure that adequate help (on the trucks themselves) is available for fast handling of cargo where the truck does the handling.

Likewise, the investigation of specific complaints of pier operation has disclosed many ways in which the pier operators can speed the trucking by pier improvements.

The bureau, which processed close to 350 complaints and eliminated the causes in many cases, hopes to extend its activities in the next year, and is now planning to issue regular reports on progress.

Spearheading the bureau is an executive committee of eight. Steamship representatives are F. A. Warner, Isthmian Steamship Co.; A. F. Kearney, American Export Lines; Morrison Pretz, Moore-McCormack Lines.

Motor carriers representatives are Ted Ficke, Jr. of Ted Ficke, Jr.; J. F. Adams, Brooks Transportation Co.; J. A. Hoffman, Motor Haulage Co.

P. E. McIntyre, general freight traffic manager of the United States Lines, and J. M. Adelizzi, managing director, Motor Carriers Association of New York, are co-chairmen. C. H. Callaghan, executive vice president and W. W. Kohl of the Maritime Association of the Port of New York are ex-officio members of this Committee.

The paid staff of the bureau consists of Horace Jennings, executive secretary, assisted by two experienced field men, one selected from the steamship industry and the other the motor carrier interests. The field men jointly investigate and report on each complaint and if no solution is immediately found the matter is referred to the executive committee for such corrective action as may be indicated.

In numbers of instances both sides to the case are invited to meet with the committee for discussion and possible solution.

No longer do the age-old verbal battles between pier personnel and truckmen enliven the waterfront and it is refreshing to see both parties to an argument sitting around a conference table ironing out their own and others difficulties in a friendly and cooperative spirit.

The yearly budget of the bureau is underwritten by the steamship, motor carrier and other pier operational interests serving the Port of New York.

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Cleveland Office Opened For Port of New York Authority

The Port of New York Authority has expanded its trade promotion service with the opening of another office in the Mid-West. Besides the Chicago office, the new office will be located in Cleveland in the Union Commerce Building at Euclid Avenue and East Ninth Street. Charles J. Hafner, formerly assistant manager of the Chicago office will be in charge at Cleveland.

According to Mr. Howard S. Cullman, chairman of the PNYA, "extension of the Port Authority's trade promotion service has been necessitated by increasing competition among Atlantic and Gulf ports for the postwar export freight now moving overseas. It is important that shippers from the Cleveland-Detroit area be informed of the advantages of shipping goods through the Port of New York. Within a hundred-mile radius of the city of Cleveland there are some 300 important industrial firms."

"America's Most Modern Port" Long Beach's New Brochure

"America's Most Modern Port" is the featured slogan of the new 48-page illustrated booklet furnishing a complete picture of the Port of Long Beach's rapidly growing facilities. Giving the history of the port and an outline of future developments which will cost approximately $100 million when completed this brochure is being distributed throughout the shipping industry.

Among projects contemplated for the future are a grain elevator and a refrigerated warehouse, two facilities which do not exist at present in Southern California ports. Provision will be made for a minimum of 85 large ship berths, 36 modern transit sheds, 12 warehouses plus large areas of shipside open storage space.

According to the brochure, Richard Henry Dana in his book "Two Years Before the Mast," described a visit to the port in 1835 and called it the most lonely and desolate spot on the California coastline. At that time, there was only one small building, an adobe hut used for storing hides and as sleeping quarters for shippers who came to the landing from the interior. However, little development of the port itself took place until 1938 when the port first began to derive revenue from municipal oil wells located in the Harbor District. Since that time, in the short span of only ten years, the port has developed rapidly and now has some of the finest shipping facilities available, with 85,280 linear feet of existing deep water frontage including municipal, federal and private with a 40-foot minimum depth of water at low tide. All permanent utilities systems in the Outer Harbor are underground, eliminating danger to high cargo handling equipment. There are 22 miles of municipal railroad trackage with a classification yard in the rear of Pier A with capacity of 200 railway cars. For truck cargoes, wide paved highways lead to all piers and transit sheds. With all these developments, the Port of Long Beach remains the only debt-free port in the world, supported by neither taxation or bond issues.

One of the most extensively used facilities in the port is the bulk loading conveyor located at Pier D. Bulk cargoes, such as ore, coke, coal, potash, salt, etc., can be loaded aboard ship at the rate of 250 to 300 tons per hour.

Alvin K. Maddy, executive secretary of the port administrative staff, prepared the book, and Patch and Curtis Advertising Agency, Long Beach, produced it.

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Modernizing Locks On Tombigbee-Warrior

Modernizing the 40-year-old lock system on the Tombigbee-Warrior waterway between Mobile and Birmingham ports is now underway, according to the corps of engineers. First contract in the program was awarded to Whaley Company of Birmingham for $12,310 worth of work on lock No. 3 in the waterway.

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American Port Authorities Elect New Officers

H. C. Brochel, Milwaukee, was elected president of the American Association of Port Authorities at the 1948 convention held aboard the steamer QUEBEC sailing from Montreal for five days along the St. Lawrence and Saguenay Rivers and calling at Quebec and other ports.

Mr. Brochel succeeded R. K. Smith of the National Harbours Board of Canada.

First vice president elected was A. H. Abel, Oakland, and second vice president Alva P. Frith, Lake Charles, La.

The convention held from Sept. 27 to October 3 was attended by 12 well-known port authorities from Latin America. This is due largely to the efforts of E. O. Jewell, general manager of the Port of New Orleans.

The representatives from Latin America inspected the facilities of the Port of New Orleans. The mutual inspection of ports, is an important aspect of bettering and improving trade relations with other ports and countries of the world.

Foreign countries represented were, Argentina, Brazil, Colombia, Chile, Uruguay and Sweden.

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Atlantic-Texas Service Sought

The Gulf Ports Association last September elected new officers and adopted a resolution to renew its efforts to secure prompt re-establishment of adequate coastwise steamship service between Atlantic ports and Texas Gulf coast ports.

The board directed E. H. Thornton of Galveston, new president succeeding A. P. Firth of Lake Charles, La., to write each congressman and senator from states bordering the Gulf coast, enclosing a copy of the resolution.

Other new officers named were Henry W. Sweet of Mobile, first vice-president; David Cottrell, Gulfport, Miss., second vice-president, and J. E. Parrish of Galveston secretary-treasurer.

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N.Y. Port Authority Leases Navy Dockside Property

A leasehold agreement with the Navy for 33 acres of land and buildings on the northeast channel of Port Newark, was signed recently by The Port of New York Authority. This desirable dockside property includes seven deep-set ship berths, two dockside transit sheds and a large one-story and a four-story warehouse.

The Port Authority is rapidly furthering its program for the development of the Newark Marine Terminal and providing for the immediate use of the area by shipping companies and other commercial firms.

Under the terms of the Navy lease, which runs for ten years and is renewable thereafter for five years, the Port Authority in lieu of rental will do up to $20,000 a year in maintenance work on the portion of the Navy property not occupied by the Authority; will invest approximately $377,000 in rehabilitation and new construction, and will return the improved property to the Navy at the expiration of the 15 years.

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Port Engineers

(Continued from page 46)

of the maritime industry are the "watchdogs" which establish and enforce standards of ship construction and maintenance he continued: "The well diversified personnel in the bureau insures that the traditional and sometime very desirable conservatism of a classification society does not preclude the timely application of tested and proven technological innovations."

Report was made of the transfer of James McCann from Portland to overseas duty with the American Bureau. Change of meeting date to the second Thursday of each month was also recorded. Announcement was made that the principal speaker for the October meeting would be Q. A. Herwig, Marine Service, Inc., Seattle, to be heard on the subject of plastic paint, diversified with his showing of the film "Forty Centuries of Rope" by courtesy of American Manufacturing Company, Brooklyn, makers of American Cordage brand of rope.

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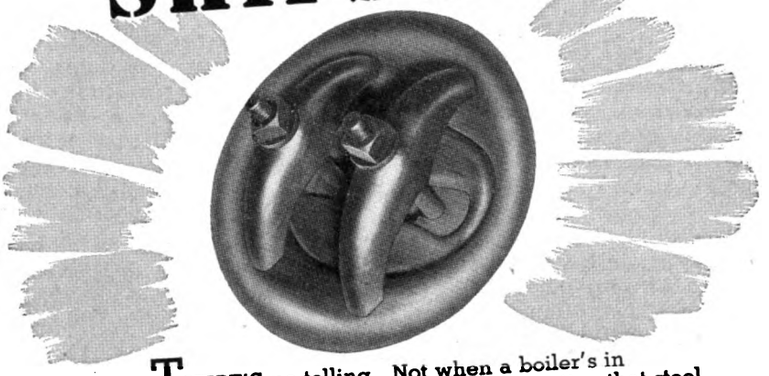
The Port of Houston reports the tonnage of 26,973,053 handled through the port for the period January-August, 1948, represented an increase of 19 per cent over the same period of 1947.

SHIPSHAPE?



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Emergencies Routine to G-E's "Keep 'Em Sailing Service"

When the General Electric Company presented its highest recognition, the Charles A. Coffin Award, to 58 members of the G-E organization this year, two of the recipients were honored for machining a bull gear shaft down .051 inches. This, in itself, is no amazing feat, but what made these men outstanding was that they accomplished the job without removing the gear from the ship. The shaft remained in its bearings throughout the delicate operation.

Presenting of high awards is one example of the importance G-E attaches to marine repair. Since World War I this company has kept replacement parts and skilled service available to enable ships to return to sea with a minimum of time lost in port for repairs. When the first G-E steam turbine went into a Hog Islander more than thirty years ago, the service was started, and continues today as the "Keep 'em Sailing Service," a name that it lives up to in many ways.

Best known activities of the service are probably the spectacular emergency jobs that it has accomplished. However, the great majority of cases handled by scores of marine field engineers, numerous service shops, and two mammoth warehouses, are run-of-the-mill repairs of which little is ever heard but which are far more important to the individual port engineers and port captains than are all the dramatic successes rolled together.

Works Five Ways

General Electric explains its position by listing five ways in which it tries to help the maritime industry: skilled service engineering, replacement stocks on each coast, complete service shop repair facilities at convenient places, a unit exchange plan and a tightly-knit, nationwide organization. Quite frankly, they will admit they are not perfect—they cannot possibly stock everything that every ship needs and sometimes are a little short of the number of skilled personnel they would like to have available—but they say they are far from the end of their plans and are still trying for perfection.

The G-E Service man is a combination of doctor, plumber, engineer and psychologist—"General Practitioner of the High Seas" might be a good title. He must be jack-of-all-trades and master of several. One of the old, experienced hands, a man who has been following ship repair since he was 16 years old, recalls the New Year's Eve during the recent war when an emergency call came in at 7 p.m. Although already in evening clothes for a party, the veteran serviceman started the organization rolling to supply a complete turbine rotor for one of the original Hog Islanders still in active service. Twelve hours later a replacement rotor was en route by Navy truck and by 5 p.m. of the new year the rotor had been delivered from the Erie factory to Baltimore.

Service engineers must be prepared to supervise electrical and mechanical repairs both afloat and ashore, for sometimes the Keep 'em Sailing Service handles beach jobs like the one it did in repairing a large loading crane in Texas City after the disaster.

In the major ports where service shops are located, repairs are sometimes made between one port and the next. Along the New York State Barge Canal, G-E has an information arrangement worked out with the lock masters that keeps track of ships that need repairs as they approach Schenectady. The serviceman meets the tug or barge at one lock, rides several miles and sometimes through two or three more locks while making the necessary repairs, then leaves the ship at another lock when he is finished.

Experts in Diagnosis

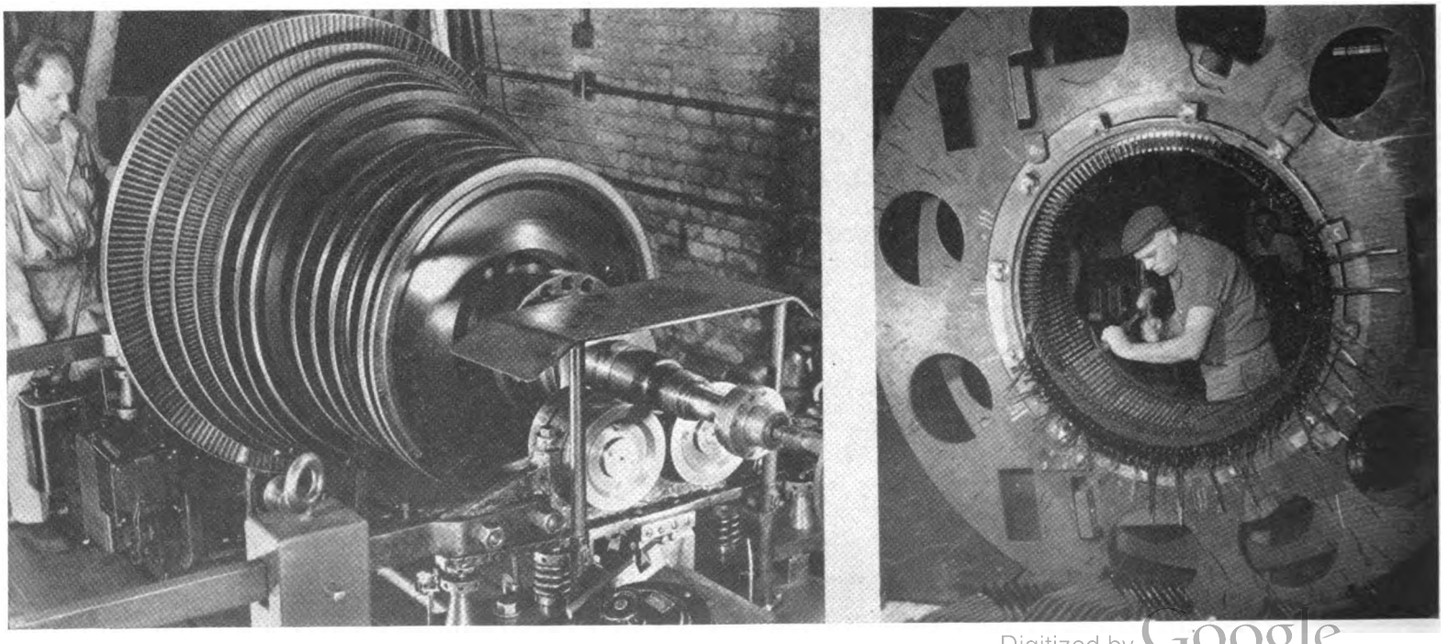
Like a horse doctor, the serviceman must make his diagnosis without any hints from the patient. His skill with his listening devices, thermometers, gauges, and other varied instruments that he carries in his medicine bag, must be coupled with a great deal of "know-how," common sense, and experience.

As demonstrated in the case of Coffin Award winners, Guy Lathers and C. P. Ackerman, they must "make-do" rather than lay a ship up for expensive port time. Lathers and Ackerman had to machine a badly scored bull gear shaft aboard the ss MORMACWAVE. Taking the bull gear ashore would have meant removing decking, wiring, auxiliaries, fittings, and ladders from the engine space, a time-consuming task. Instead, they built a support around the gear that held a cutting tool against the shaft. When the shaft was turned in its bearings at slow speed, it machined itself down.

A typical case out of many which face the Service happened last year when the Keystone Shipping Co. tanker ss PETERSBURG radioed for help as she steamed south off Cape Hatteras. Operating conditions had caused propulsion motor trouble and replacement parts were needed quickly. As the PETERSBURG proceeded south toward Jacksonville at reduced speed, the G-E Philadelphia office was notified and the service swung into action. The New York warehouse air expressed motor coils and a current transformer out of its million-dollar stock,

(Continued on Page 57)

"KEEP 'EM SAILING SERVICE" . . . G-E serviceman balancing a turbine rotor, left, one of the many turbine rehabilitating operations which includes re-bucketing, shaft straightening, and rebuilding worn or corroded spots with metal spraying. Right, slot wedges being placed in slots of stationary armature for A-C machine.



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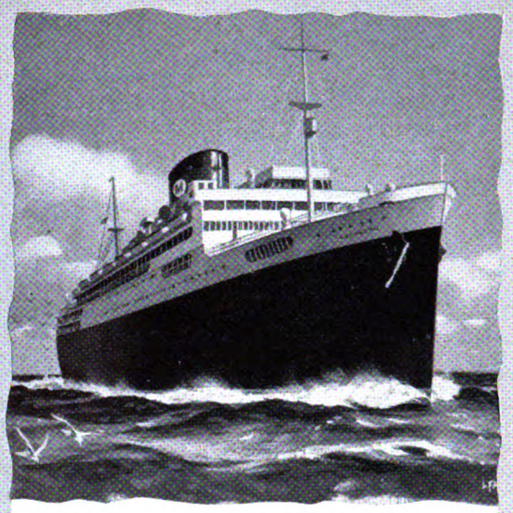

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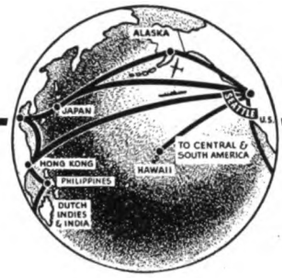

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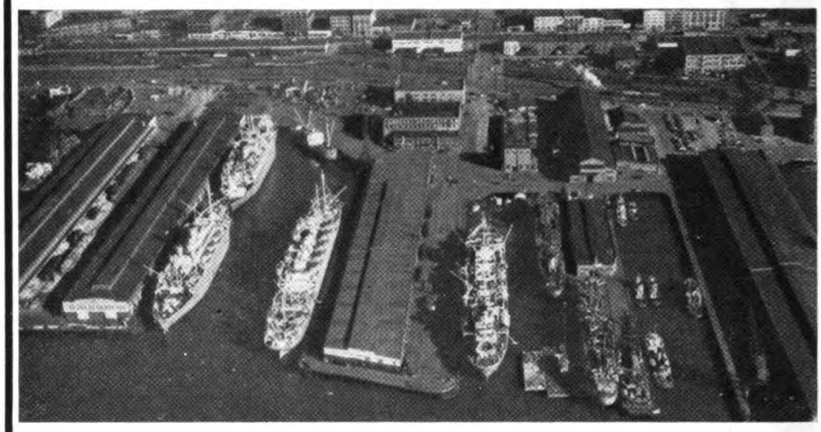

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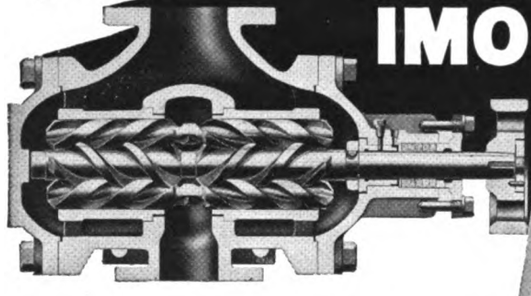

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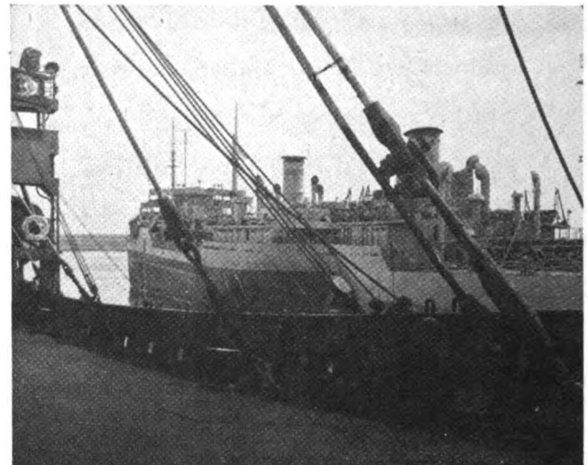

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"Keep 'Em Sailing Service"

(Continued from page 54)

a service engineer in Jacksonville was alerted and an experienced repair man left Atlanta to assist him.

The tanker berthed down river from Jacksonville and the servicemen went aboard looking for the root of the trouble. The damaged current transformer was replaced rapidly. A motor coil ground was found but core laminations were so badly damaged it was estimated that eight weeks would be necessary for repairs. Using "know-how" gained through years of experience, the servicemen, by working 16 to 24 hours a day were able to conduct dock trials eight days later.

Large Part Stocks Maintained

One of G-E's biggest difficulties is explaining to harassed operators that the service shops and warehouses only stock replacements for certain ships. The vessels they service represent a large portion of our merchant fleet, but there are people who think of the service as a super-size ship chandler. Actually, it carries parts for G-E turbine-power T2 tankers, C-2, C-3, C-4, AP-3 and AP-4 cargo ships, and, of course, the remainder of the Hog Islanders. In addition, they service auxiliaries, switchgear, motors and controls for vessels with other makes of propulsion equipment.

During the war the service was called upon to do jobs which now appear amazing. Consider for instance the sub in Australia with two thirds of its main controls blown away. Cablegrams to Washington resulted in a meeting of an admiral and the nearest G-E representative at six o'clock one Thursday evening. By seven o'clock a conference was underway in Schenectady and by nine an extra crew had been added to the second shift to gather material and manufacture parts. By Saturday morning a new control system was ready. Behind police sirens it was rushed 17 miles to the Albany airport and a waiting Navy bomber. It was delivered to the sub one week after the first cablegram was sent.

The job was not finished, however. Two days later, on Saturday, it was discovered that cooler tubes were damaged and had to be replaced. Again the call went out and G-E workmen spent all Saturday night rounding up the tubes and crating them for overseas shipment. Rushed to New York by personal messenger, they arrived at the sub on Friday.

When the sub returned to the States, the skipper made a special trip to Schenectady to meet and thank personally every man who had taken part in the job.

Part Exchange Saves Time

Now that the emergencies and hustlings of the war are over, the service has added new ways to cut port time. A unit exchange plan allows a ship to trade a damaged unit, such as a rotor or even a complete small turbine, for a reconditioned one. The damaged part is repaired and "put on the shelf" in the Service Shop while the ship goes on its way with a good-as-new part that has been installed during loading or unloading.

The Quarterly Inspection Plan

The latest addition to the Keep 'em Sailing Service is an automatic quarterly inspection plan, for which G-E powered ships may contract. The plan is designed to catch trouble in its earliest stages. Service engineers come over the side while the ship is entering port, check the machinery while it is operating and give it a personal inspection at the dock. They consult with the chief engineer on performance and maintenance and finally submit a fully-detailed report, with recommendations. A copy goes to the chief engineer of the ship and one goes to each Service Shop in the G-E chain, where it is filed for future reference. If the ship must leave before the men are through, a similar team of experts takes up the job at the next port so that no sailing time is lost.

Since records show a greater number of steam-turbine ships are powered by G-E, the problem of keeping sufficient manpower and enough replacement parts on hand has sometimes been tremendous. When shortages arise, telegrams, long-distance phone calls and cablegrams go out. A recent example of this concerned the Baltimore service shop and the ss CATHAM, later renamed the ss TYDOL BAYONNE.

Salt water had nearly ruined the 6000-hp main propulsion turbine-generator, and stator coils were needed in a hurry. A phone call to New York found the shop temporarily out of stator coils, but the service shop superintendent immediately called San Francisco and managed to locate 20 stator coils in the G-E warehouse there. These were on a plane winging

(Continued on page 62)

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EQUIPMENTALK

D. J. Erikson Becomes President Of Hagan Corp.

D. J. Erikson has recently been elected to the presidency of Hagan Corporation and its subsidiary companies — Calgon, Inc., Hall Laboratories, Inc., and Buromin Company. Formerly vice president in charge of sales Mr. Erikson succeeds J. M. Hopwood, president of Hagan Corporation since 1918. Mr. Hopwood was elected chairman of the board of directors of the Hagan group.

Joining Hagan Corporation in 1920, Mr. Erikson moved from the drafting board to field service and then into sales work becoming vice president in charge of sales of the Hagan Corporation and subsidiaries in 1939.

Succeeding Mr. Erikson as vice president in charge of sales, Hagan Corporation, is M. J. Boho, formerly assistant general manager of sales. Mr. Boho, an author of a number of technical papers on boiler combustion control and related subjects, joined the company in 1936 as a field service engineer. According to the company he played an important part in the designing, installation and adjustment of Hagan automatic combustion controls in many of the large steel and utility power plants in the U. S. and Canada before the war.

E. W. Butzler, a member of the staff of Hall Laboratories, a subsidiary of Hagan Corporation, since their establishment twenty years ago, has been appointed to the new position of business manager of the firm.

PLEASED WITH INCREASING USE OF MARINE ALUMINUM LADDERS AND GANGWAYS—Left to right: SAM H. CARBIS, founder and President of the Aluminum Ladder Company, Worthington, Pennsylvania, visiting in San Francisco with his California sales representative, CHARLES M. MARTIN, vice president of the J. O. Martin Company.

Mr. Carbis, one time a mechanic and later jobbing division superintendent of the Aluminum Company of America, founded the Aluminum Ladder Company during the early 1930's. Last summer he made an automobile trip throughout the West, calling on the Martin Company at San Francisco and Phil Andrews of the Parma Company, Seattle, his firm's Pacific northwest representatives.

Sun Shipyard Pioneered Tanker Flue Gas Systems

The September issue of The LOG described the Cargocaire tanker system, which provides dehumidified air to arrest the heavy corrosion associated especially with "clean oil" cargoes. When added protection is desired against fire and explosion, the Cargocaire equipment dehumidifies boiler flue gases after they have been cooled and washed by equipment designed and built by the Sun Shipbuilding and Dry Dock Company of Chester, Pa.

The Sun Shipbuilding and Dry Dock Company and the Sun Oil Company have pioneered and guided the development of flue gas systems for tankers for many years. Their wide experience was invaluable in working out a practical design to combine the corrosion-prevention of dehumidification and the explosion-prevention of inert flue gases by removal of water vapor from them.

Sun is expected to furnish flue gas elements for two tankers of the United States Navy for which plans are underway to use the combined system.

Based on the evident good results of the trial system on the ss PETERSBURG, the Keystone Shipping Company is preparing to install the combined Cargocaire dehumidified air and flue gas system for a complete ship in another of the tankers which it operates.

D. J. ERIKSON, left, newly-elected President of Hagan Corporation and M. J. BOHO, right, Vice President in Charge of Sales of the company.

Dampney Announces Two New Marine Representatives

The Dampney Company of America, Hyde Park, Boston 36, Massachusetts, announces the appointment of two marine sales representatives. Dampney protective coatings are now available in the Port of Savannah through Savannah Ship Chandlery & Supply Company. In Cleveland, Combustion Equipment & Insulation Company, who already handle APEXIOR and THUR-MA-LOX industrially in that area, now represent the company in the sale of these materials to the Great Lakes marine trade.

Hart & Burns Name New Marine Representatives

Following a business trip to the Pacific Northwest, Billy Mitchell, Jr., vice president in charge of sales, Hart and Burns, Inc., Riverside, Calif., manufacturers of Navicote and Durahart marine finishes, has announced the appointment of Seattle Marine and Fishing Supply Company and Tacoma Marine Supply Company as distributors in Washington for the company's yacht and small vessel division, and Captain Bjarne Qvale as distributor for the company's heavy marine division.

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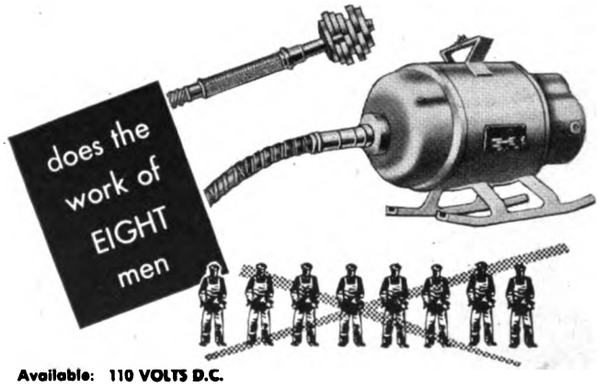

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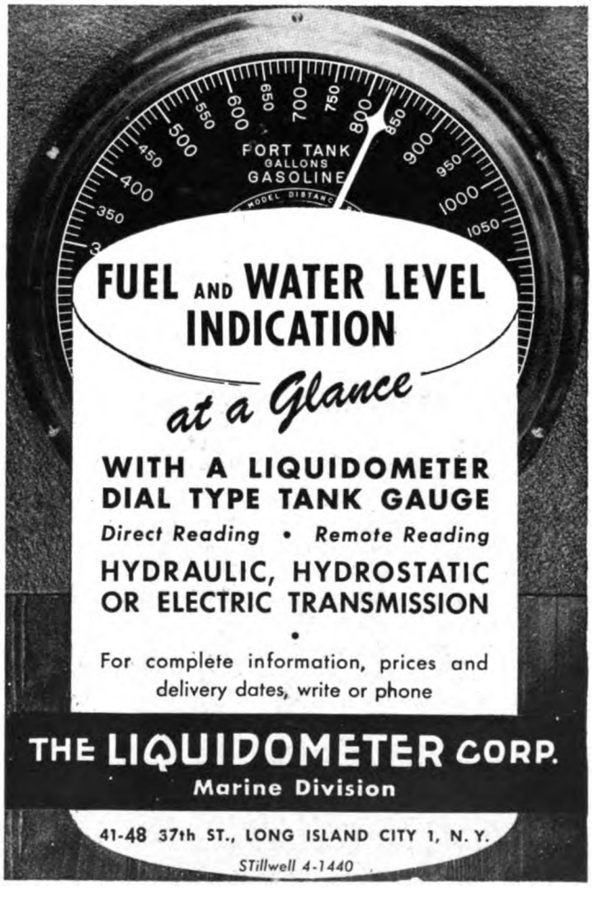

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CAPTAIN V. P. MARSHALL, Master of the Hillcone Steamship Company's tanker CORNELL, who found Sperry radar helpful in navigating through blinding dust storms.

Sperry Radar Aids Navigating Through Dust Storms

Sperry radars are even helpful navigating through blinding dust storms, according to Captain V. P. Marshall, master of the Hillcone Steamship Company's tanker CORNELL.

"This vessel for the past three voyages has been operating in the Red Sea, Arabian Sea, Gulf of Oman and the Persian Gulf making such ports as Ras Tanura in Saudi Arabia and Abadan in Iran," Captain Marshall recently wrote to the Sperry Gyroscope Company, Brooklyn. "Shore lights and other aids to navigation are few and far between along these routes, sand and dust storms are frequent and visibility often is cut to one mile, or less, for prolonged periods. Numerous islands lie along the route, as well as capes and shoals to be cleared. Dust and haze make celestial navigation impossible for days at a time and when positions are obtained, they are subject to large errors.

"With our Sperry radar we have been able to take all this in our stride, no time has been lost by the vessel arriving at, or sailing from, dust shrouded ports, collisions have been averted by wide margins during very poor visibility, islands safely passed and shoals avoided. On two occasions we have made Ras Tanura in one mile visibility due to sand and dust, picking up the route beacons which are but three pile beacons, at a distance of 15 miles with our Sperry radar. Last voyage we sailed from Ras Tanura in a dust storm and had it not been for our radar we could not have done so—at least 12 to 18 hours was saved for the vessel. This is but one instance where Sperry radar has saved the vessel valuable time.

"We have had our radar about a year and during that time it has helped us to navigate the Straits of Magellan, Mozambique Channel, Gulf of Suez, Straits of Gibraltar plus areas previously mentioned. Our Sperry Loran brings us in from the wide open spaces and our Sperry Radar takes over from there. I cannot speak too highly of both installations."

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American Hoist Issues Topping Winch Bulletin

"American Boom Topping Winch" is the title of a new eight-page bulletin issued by the American Hoist & Derrick Company, St. Paul 1, Minn. Safety, economy and simplicity of operation are the features of Model 121C described.

American's boom topping winch not only prevents accidents but cuts each boom topping operation from 30 to 2½ minutes. "On an average vessel," states the bulletin, "with five hatches, 16 booms and a gang of 20 men per hatch, a saving of 780 man hours can be made on a voyage involving three ports of call and an average of six boom shifts per port of call."

Safety is emphasized for the boom can only be raised or lowered WITHOUT a load on the main fall. Should the controller lever be operated while the boom is handling a load, nothing happens. The topping winch positively locks and can not be moved until relieved of its load.

American's topping winch can be mounted most anywhere in a high, out-of-the-way position, and the foolproof, watertight electric controller can be installed in any convenient location. An inexperienced deck hand can operate it.

Copies of the new bulletin, Catalog 1500-W-11, may be obtained from the following American Hoist & Derrick Company offices: Houston, Texas, Gulf Engineering Co.; San Francisco, Calif., Thomas A. Short Co.; Savannah, Ga., Gulf Engineering Co.; New York City, American Hoist & Derrick Co., 50 Church St.; New Orleans, La., Gulf Engineering Co.; Portland, Ore., Helser Machine & Marine Works, Inc.; St. Paul, Minn., American Hoist & Derrick Co.

New Dravo Towboats Consolidate Alarm Systems

Consolidated, centrally-located alarm systems to warn Diesel engine operators of high jacket water temperatures and low lubricating oil pressures are among the modern developments used in many of the new towboats built by Dravo Corporation, Pittsburgh.

The devices, supplied through the office of Stuart D. Brown, Sewickley, Pennsylvania, for the manufacturer, Clark-Cooper Co., Palmyra, New Jersey, eliminate the necessity of investigating at several locations to determine the source of trouble. This had been the case when individual signal lights and buzzers or alarm bells were installed for each engine or other equipment.

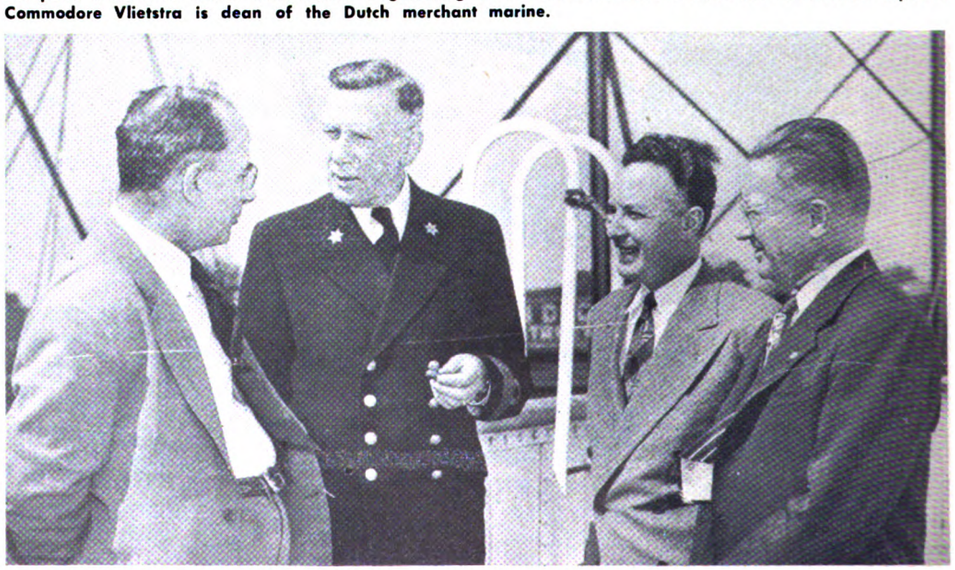
In the consolidated alarm system, contactors for lube oil and jacket water are electrically connected to a single alarm panel in the central engine room control board, visible at all times to the engineer.

Although the system can be expanded to include warnings of low fuel level in day tanks, low air pressure and other indications, recent installations in Dravo-built towboats have been kept simple. They incorporate just the essential notifications of high jacket water temperature and low oil pressure in main and auxiliary engines.

In the alarm panel, a white indicator light burns continuously when the current for the system is on. Red and amber lights, respectively, warn of low lube oil pressure and high jacket water temperature for the particular engine. An audible alarm sounds simultaneously. This may be silenced by switching off the affected circuit but the warning light continues to burn until the trouble is corrected.

The audible alarm will sound when engines are stopped to be reversed but during such periods, a main switch can be used to cut out operation of all circuits. Variations are possible to make this cut-out automatically.

ACCOMPANYING photograph shows, left to right, HARRY GAMLEN, San Francisco, President of the Gamlen Chemical Company, COMMODORE SIEBE VLIETSTRA, Master of the Holland-American Line flagship NIEUW AMSTERDAM, J. KENNETH RODEN, of the Gamlen New York staff, and VAL SAVAGE, New York, Atlantic Coast Marine Manager for the Gamlen company. This picture was taken on the bridge of the NIEUW AMSTERDAM at New York as Mr. Gamlen and Mr. Savage sailed on that ship for Belgium, Holland and other European nations to confer with marine engineering authorities on boiler corrosion and combustion deposits. Commodore Vlietstra is dean of the Dutch merchant marine.



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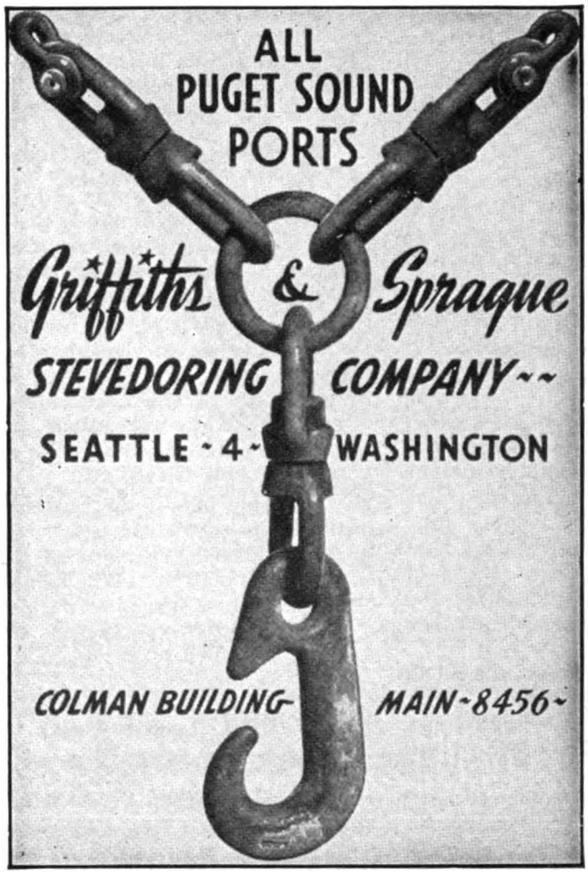

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LYKES ORIENT LINE—From U. S. Gulf ports to The Philippines, Japan, Korea, China, Federation of Malaya, Netherlands East Indies and other Far Eastern areas.

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ARTHUR O. KOLSTAD, new southern California representative for Thomas C. Wilson, Inc., Long Island City manufacturers of tube cleaners.

Mr. Kolstad heads the Kolstad Engineering Company, 38 Giralda Walk, Long Beach 3, telephone Long Beach 8-3904. In the U.S. Navy 13 years and later, for 16 years with the Richfield Oil Company, Mr. Kolstad resigned in 1942 to go into sales work in power plant equipment.

John Massenberg Goes to Great Lakes Plant

John Massenberg, formerly head of the Pacific Coast trial board of the United States Maritime Commission, has moved from San Francisco to Cleveland to be general superintendent of the Rud Machine Company, which is owned by Hutchinson & Company, which operates three steamship lines on the Great Lakes, the Pioneer Steamship Company, Buckeye Steamship Company and the Inland Steel Company. Mr. Massenberg recently was with the J. Paul Thompson Company, San Francisco marine consultants.

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Leading Underwriters Open in S.F. and L.A.

Chubb & Son, one of the country's leading insurance underwriting firms, has opened a Pacific Department with offices at 320 California Street, San Francisco, and 629 South Spring Street, Los Angeles, covering the ten western states, Hawaii and Alaska.

They are managers of Federal Insurance Company, Vigilant Insurance Company, Sea Insurance Company, Marine Insurance Company, Ltd., Cathay Insurance Company and United States Guarantee Company. Combined admitted assets of the six companies, as of December 1947, total $95,225,343, with surplus to policyholders of $50,046,389.

Robert E. Wallace, vice president of the Federal Insurance Company and Vigilant Insurance Company, will supervise the Pacific Department with headquarters at San Francisco. Edward S. Reed will head the Los Angeles office. George Meredith, resident vice president of U. S. Guarantee Company, will be in charge of bonding.

Other key posts are held by Cecil O. West, fire and automobile; Arnold G. Ure, casualty; Herbert L. Hodgetts, ocean and inland marine; Roy Little, surety; James S. McLean, casualty claims; James R. Miller, other claims.

The company's activities cover fire, automobile, casualty, surety, inland marine and marine policies. They are reported to be one of the world's largest underwriters of ocean cargo.

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New Recorder Developed By Submarine Signal

A new "straightline" recorder for small craft that gives a true and undistorted horizontal graph of the bottom contour within a depth range of 100 fathoms, has recently been perfected and is now in production by the Submarine Signal Co. of Boston, Mass. It also discloses schools of fish and records their depth under the hull so that fishermen may cast their nets accordingly.

The entire equipment consists of a single control unit and one transducer to be mounted on the keel. All sounding and recording mechanisms are housed in one compact unit, only 15½" high, 14½" wide and 5⅞" deep. A large chart window, 12" x 7", permits one hour's recording to be viewed at a single glance, and the chart speed is 12" per hour or 72 hours per roll of paper for economical operation. For certain fishing operations where higher chart speeds are required, chart speeds of 18" and 24" per hour are available.

The transducer, which acts both as a transmitter and receiver, is mounted in a rugged, compact, stainless steel housing for quick and easy installation.

The equipment operates on 110 vac or on 6, 12, 32 or 110 Vdc with vibrator packs supplied with the equipment as specified. The operation is simple with a single control for power and sensitivity, an illumination control and a "fix" marker button which enables the operator to place an index line on the chart for establishing a time or position reference. Chart paper can be replaced in less than a minute by an experienced operator.

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"Keep 'Em Sailing Service"

(Continued from page 57)

east the next morning and the coils were delivered that afternoon, less than 24 hours after the phone call was placed.

Chief engineers have found that the welcome mat is always out in the local G-E office or service shop, and many make a habit of dropping in every time they hit port. The marine service men are familiar figures around the various ports and are usually the first ones called when trouble brews.

Probably one of the biggest factors in the Keep 'em Sailing Service is its pride in a job well done, and in the reputation it has built up. In the highly competitive merchant shipping business, where a high degree of operating efficiency is called for, such service plays a vital role.

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217 RCA Radar Units Bought by U. S. Signal Corps

Purchase by the U. S. Signal Corps of 217 commercial-type marine radar units is announced by Walter A. Buck, President of the Radiomarine Corporation of America.

Scheduled for installation aboard ships of the U. S. Army Transport Service, the units consist of the latest surface-search 3.2-centimeter commercial radars, and represent one of the largest single radar orders received by Radiomarine to date. Other government sales have included units to the U. S. Coast Guard, Army Corps of Engineers and U. S. Navy.

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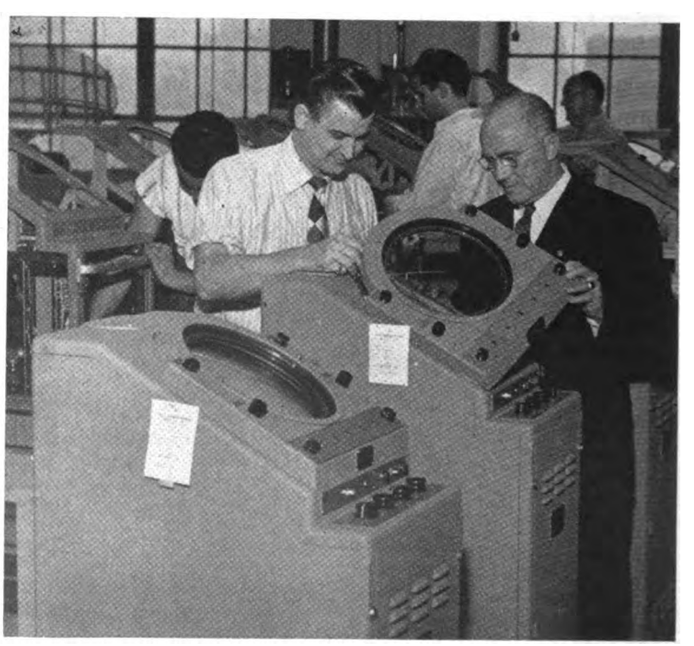

RCA RADAR ROLLS OFF PRODUCTION LINE . . . HUGH A. SAUL, right, Vice President in Charge of Production of Radiomarine Corporation of America, examines one of the RCA 3.2-centimeter radars earmarked for installation aboard a U.S. Army Transport Service ship, as he and WILLIAM B. MEDVESKY, Production Foreman of Radiomarine, inspect the production line. Radiomarine is installing a total of 217 radar units aboard Army Transport Service vessels.

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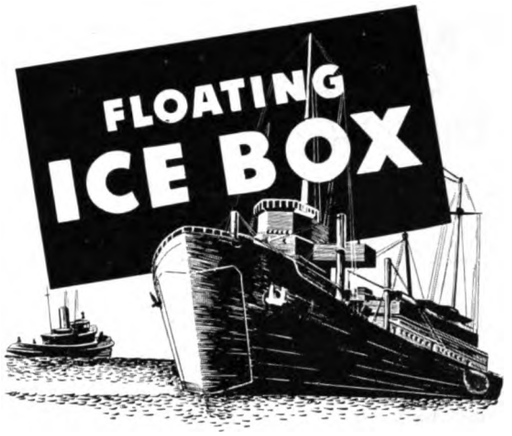

Plying the waters of the North Pacific is a new kind of fleet—converted LST's, redesigned to serve as mother ships to fishing boats. At sea these frozen food plants pick up, freeze, stow and transport the catch of smaller vessels to shore-based canneries.

Insulation is a vital item in the operation of this fleet. That's why the Columbia River Packers Association selected Asbestos Supply Company of Oregon to do all of the insulation work on their new ships, the Tinian and Saipan.

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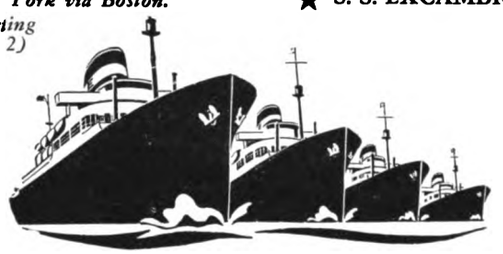

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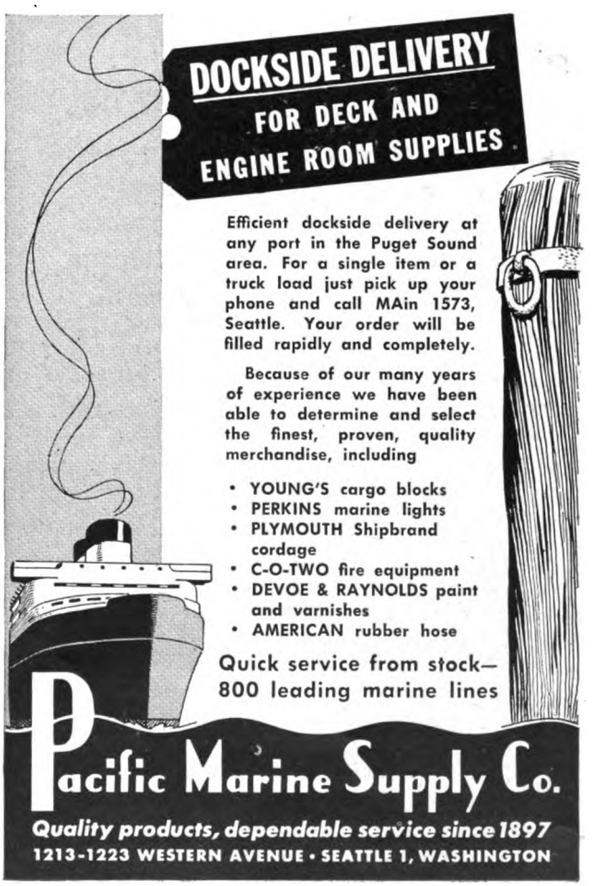

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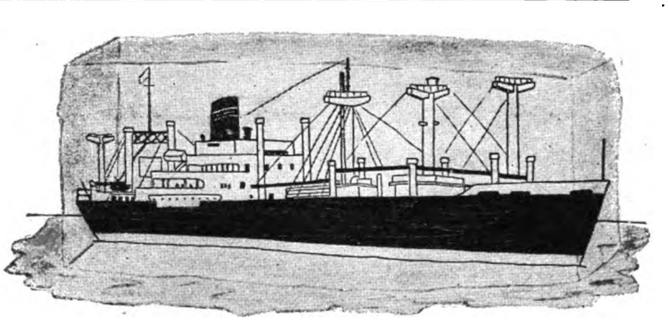

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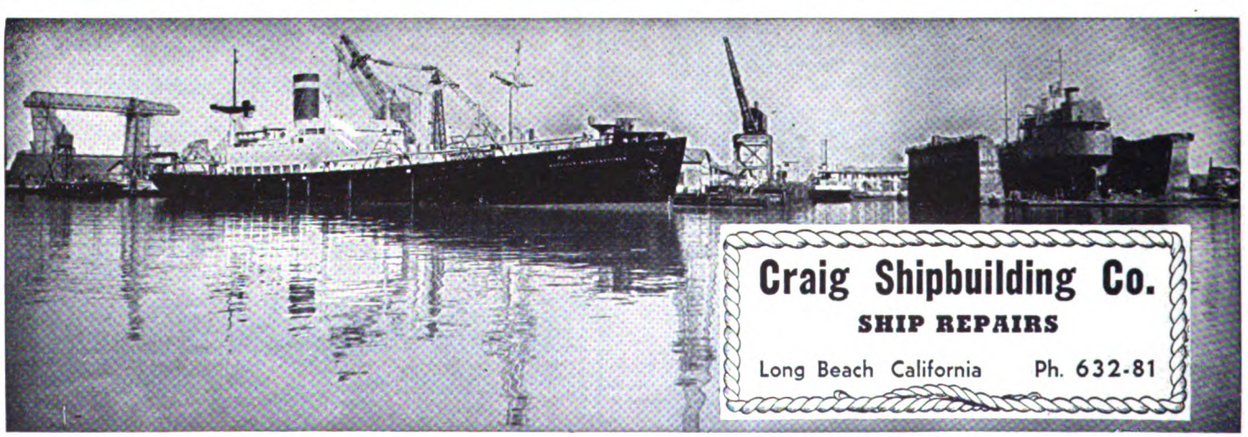

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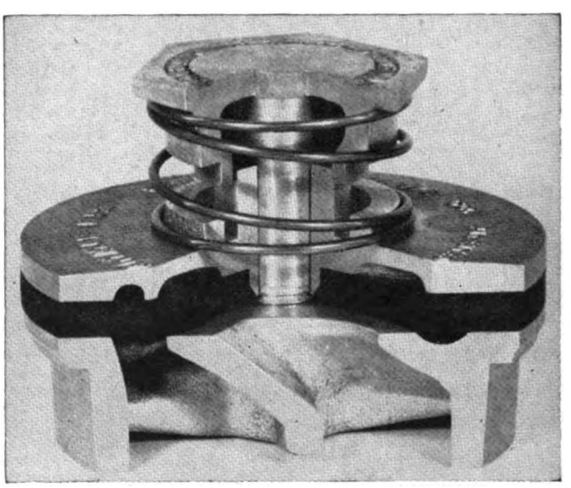

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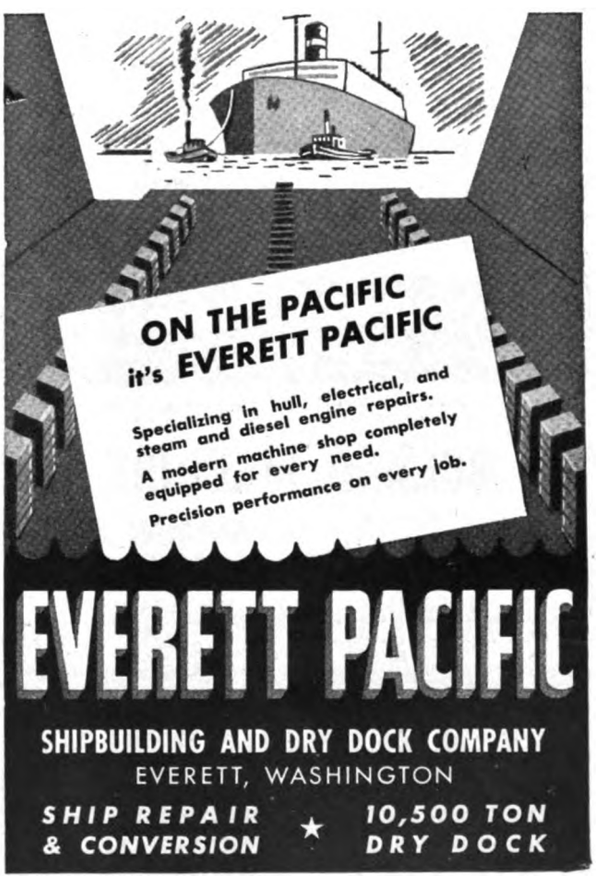

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ADVERTISER'S INDEX

Albina Engine & Machine Works 47
Alcoa Steamship Co., Inc. 9
Aluminum Company of America 11
American Brass Company 68
American Export Lines 64
American Hoist & Derrick 10
American Mail Line 65
Arnessen Electric Co. 59
Asbestos Supply Companies 63

Babcock & Wilcox., The (Refractories Div.) 43
Baier & Associates 71
Baker Dock Co. 70
Bird-Archer Company of California 71
Boland Machine & Manufacturing Co. 68

California Ship Repair Corp. 70
Catalina Island Steamship Line 70
Cavanaugh Machine Works 61
Columbia Machine Works 69
Commercial Ship Repair 16
Consolidated Services 66
Cordes Bros. 68
Craig Shipbuilding Co. 66
Crane Packing Co. 69
Curtis Bay Towing Co., The 18

Dahl-Beck Electric Co. 64
Dampney Company of America, The 53
Dee Engineering Co. 68
De Laval Steam Turbine Co., The ..... Inside Back Cover & 56
Dravis Engineering & Machine Works 65

Everett Pacific Shipbuilding & Dry Dock Co. 67

Fairbanks, Morse & Co. 14
Ferran & Co., Charles 63
Foster Wheeler Corp. 27

Gamlen Chemical Co. 57
General Electric Co. ..... 4 & 5
General Engineering & Dry Dock Co. 67
Gibson, D. M. 59
Gigy & Associates, M. J. 68
Gladding, McBean & Co. 71
Gow, Inc., Alexander 68
Great Western Cordage Co. 69
Griffiths & Sprague Stevedoring Co. 61
Gulf Shipbuilding Corp. 45

Hanson, H. C. 71
Hart & Burns, Inc. 47
Haviside Co. 63
Hiller, Paul W. 71
Horton Agency, Lou E. 71
Hough & Egbert Co. 69

International Nickel Co. 15
Isherwood & Co., Ltd., Sir Joseph W. 68

Jeans, Capt. Harvey A. 71

Lewon Bros. 72
Liquidometer Corp., The 59
Long Beach, Port of 45
Lubaid Co. 9
Luce & Co. 51
Lykes Bros. Steamship Co., Inc. 61

Mar-Dustrial Sales & Service 63
Marine Electric Co. 67
Marine & Industrial Supplies & Service, Inc. 69
Marine & Industrial Supply, Inc. 71
Marine Service, Inc. 55
Metropolitan Plumbing Supply Co. 68
Moore & Co., Engineers, C. C. 43
Moore-McCormack Lines 55
Morrison & Bevilockway 69

Nickum & Sons, W. C. 71
Nordberg Manufacturing Co. ..... Front Cover & 3
Northwest Marine Iron Works 66
Nystrom, E. W. 71

O'Donnell Copper Works, E. M. 70
Oxi Corporation 20

Pacific Marine Supply Co. 65
Perry, L. C. 71
Pilot Marine Corp. 28
Puget Sound Bridge & Dredging Co. 70
Puget Sound Freight Lines 68

Radiomarine Corporation of America 19
Raytheon Manufacturing Co. 17
Refractory Coatings Co. 70
Refrigeration Components 65
Rober, Co., W. H. 70
Rothschild International Stevedoring Co. 71

Seaboard Machinery Corp. 12
Sea-Ro Packing Co. 51
Seaside Supply Stores, Inc. 69
Seattle Marine Surveyors 71
Seattle, Port of 56
Shell Oil Co., Inc. 7
Sherwin-Williams Co. 23
Sims Pump Valve Co., Inc. 67
Socony-Vacuum Oil Co., Inc. ..... Inside Front Cover
Sopac Ship Maintenance Co. 44
Sperry Gyroscope Co., Division of the Sperry Corp. 25
Standard Oil Company of California 13
Submarine Signal Co. 41
Sumco Products, Inc. 69
Swett & Company, Geo. E. 64
Swett-Stone Corp. 64

Texas Coast Shipyards 56
The Texas Co. ..... Outside Back Cover
Thorpe & Son, Inc., J. T. 71
Todd Shipyards Corp. 1
Toumey Electric & Engineering Co. 66
Trenko, William D. 72
Tubbs Cordage Co. 50

United Fruit Co. 2
United States Lines Co. 21

Western Asbestos Co. 61
Western Machinery Corp. 72
Whittlesey, Inc., H. Newton 71
Wickwire Spencer Steel Division 8
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SALT WATER EVAPORATOR-DOUBLE EFFECT

20,000 gal./24 hr. capacity. Mfg. by Foster Wheeler. Complete with pumps, aux., etc. New, Unused. Priced to sell.

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BARDAHL

Used As A Supplement To Your Lubricating Oil

Reduces Friction 75%

Satisfied users approve BARDAHL high grade fortified oils for sticking valves, sticking rings, reduction gears, and high and low speed lubrication purposes.

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DE LAVAL GEARED TURBINES

keep the Banana Run "On Time"

From the time the green bananas leave the inland plantations until they reach the housewife, every move is calculated to the minute in order to maintain ship and car loading schedules, and assure that the bananas are ultimately received at exactly the right stage of ripeness.

Refrigerated banana ships not only must keep their schedules without fail, but must also maintain the perishable cargo in the best possible condition. De Laval equipment has been selected by the United Fruit Company for 18 new ships. Each ship is equipped with De Laval compound double reduction geared main propulsion turbines, turbo generating sets for light and power, main condenser circulating pumps, boiler feed pumps, bilge pumps, brine pumps, and many others and De Laval rotary IMO pumps for lubricating and fuel oil.

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DE LAVAL STEAM TURBINE CO., MARINE DIVISION, TRENTON 2, N. J.

N-8

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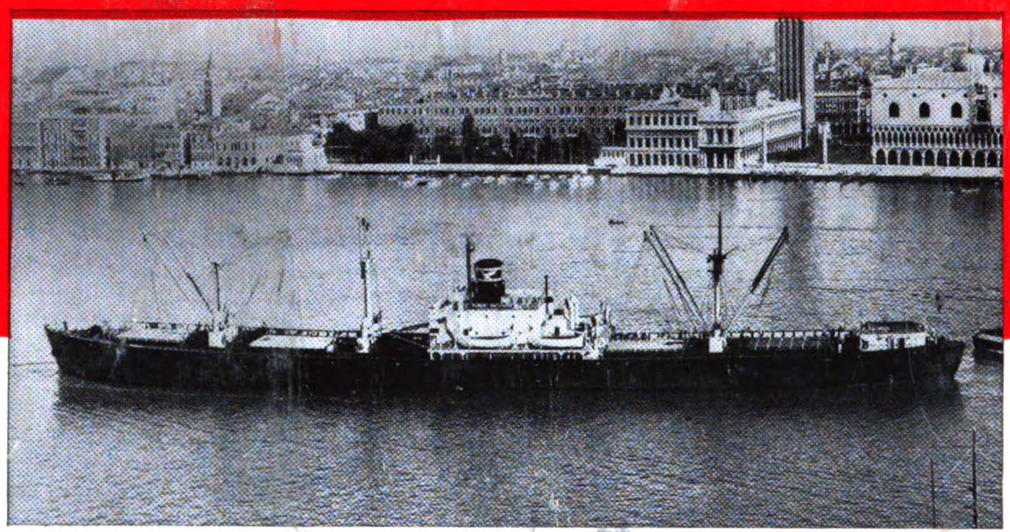
'ROUND-THE-WORLD DEPENDABILITY

Plus greater engine economy with Texaco Marine Lubricants



S/S American Starling—*American Foreign Steamship Corp.*

EVERY kind of marine prime power unit and auxiliary machinery responds to Texaco lubrication by running at its best . . . giving trouble-free performance. This means reduced maintenance costs . . . reduced fuel consumption.

Texaco Marine Lubricants are on hand at more than 350 ports . . . in the U. S. and around the world. You can be sure of uniform high quality wherever you secure them.

Texaco Marine Engineers will gladly assist in the selection of lubricants to assure the most efficient and economical operation . . . and will make regular service calls on board ship. The Texas Company, *Marine Sales Division,* 929 South Broadway, Los Angeles 15, California.

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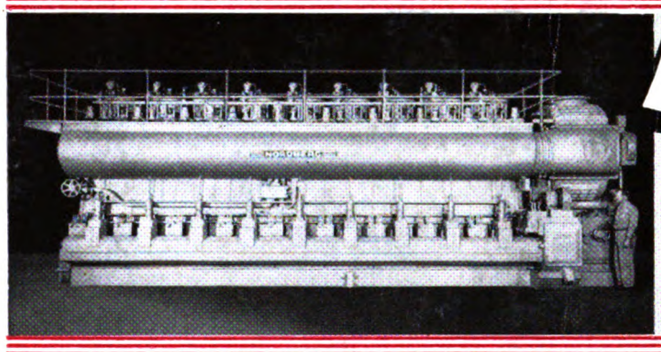
• For Ship Propulsion

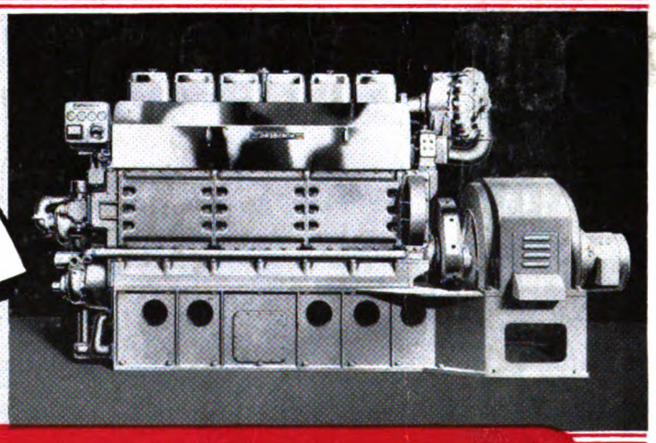
• For Auxiliary Service



Built in various types and sizes to meet all marine applications.

TWO-CYCLE

FOUR-CYCLE



See Page 3

NORDBERG
DIESEL ENGINES

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1 Dependable Service

ROUND THE WORLD

WHEREVER and whenever you sail the 7 seas, you can depend on Gargoyle Marine Lubricants and Engineering Service.

Before your ship enters any major world port, the resident Gargoyle Representative knows your ship's operating history, its service at last port of call.

He can supply you with famous Gargoyle Marine Oils exactly right for your needs.

So insist on this dependable *world-wide* lubrication service!

SOCONY-VACUUM OIL COMPANY, INC.
and Affiliates: MAGNOLIA PETROLEUM CO.
GENERAL PETROLEUM CORPORATION

GARGOYLE
Marine Oils

GARGOYLE

MARINE OILS AND ENGINEERING SERVICE

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SOMETHING HAD TO BE DONE TO IMPROVE FUEL OIL OPERATING CONDITIONS!

"Sludge in tanks, difficult pumping, dirty heaters, poor combustion, bad firesides, high fuel consumption were *all* corrected by AMEROID" —This is a typical statement of port engineers who are now using AMEROID Complete Fuel Oil Treatment and CO_2 service aboard their ships.

AMEROID Fuel Oil Treatment service program includes instruction to engineers and maintenance of simplified CO_2 equipment for efficient steam generation at no service charge.

AMEROID

Complete Fuel Oil Treatment and CO_2 Service

1. Dissolves all types of sludge—heavy settled-out ends and emulsions.
2. Cleans fuel oil transfer system.
3. Restores fuel oil heaters to original condition.
4. Creates uniform fuel oil.
5. Conditions fuel oil for complete combustion.
6. Eliminates manual cleaning of burner-tips—just soak in treatment.
7. Saves repairs and labor, and improves operating efficiency.
8. Noticeably reduces soot deposits on decks.
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11. Harmless to handle.
12. Lowest cost treatment — only 50 gal. for 10,000 barrels fuel oil.

E. F. DREW & CO., INC.

Marine Department • 15 East 26th Street, New York 10, N. Y.

Complete AMEROID Service by E. F. Drew & Co. engineers is available in principal seaports in the U. S., Canada, Panama Canal Zone, Argentina, Brazil, France, Italy and the Union of South Africa.

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...since the white ships came...

Starting half a century ago to sail to Caribbean ports for tropical fruits, the ships of the Great White Fleet began to serve the mutually beneficial trade between Middle and North America.

To coordinate cargo movements efficiently the United Fruit Company pioneered the first ship-to-shore radio in the Caribbean—known today as Tropical Radio Telegraph Company and offering a public service between the Americas.

Passenger traffic as well as cargoes steadily increased—citizens of Middle and North America both, learning to know each other better.

Today, such new crops as abaca (manila hemp), African palm oil and certain hard woods are progressing favorably, along with the traditional nutritious foods of Middle America—bananas, cocoa, coffee, sugar—and form part of the cargoes continually moving north, while—southbound—the Great White Fleet carries the products of northern farms and factories.

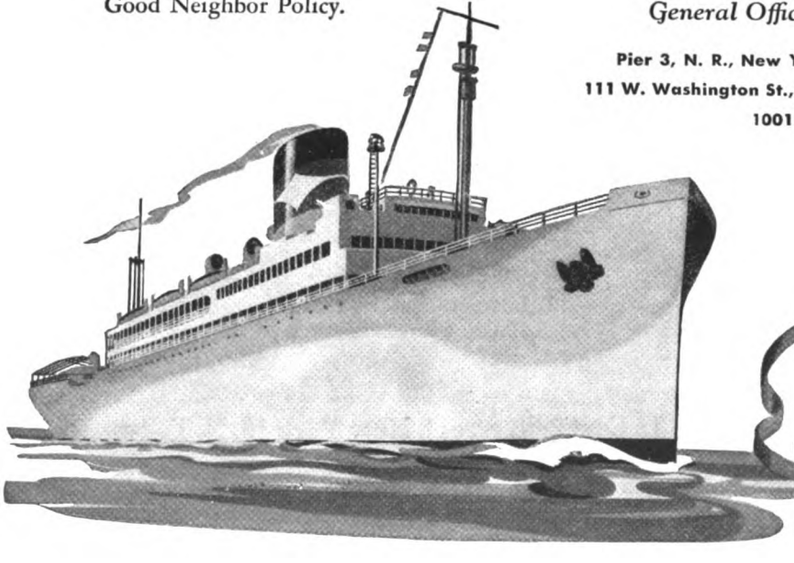
Harbinger of all this was the first white ship that sailed so long ago . . . and of much more, too . . . of the growing understanding and friendship between the Americas. The day by day contacts of thousands of individuals form the foundation of the practical Good Neighbor Policy.

GREAT WHITE FLEET

UNITED FRUIT COMPANY

General Offices: 80 Federal Street, Boston 10

Pier 3, N. R., New York 6 — 1514 K St. N. W., Washington 5
111 W. Washington St., Chicago 2 — 321 St. Charles St., New Orleans 4
1001 Fourth St., San Francisco 7



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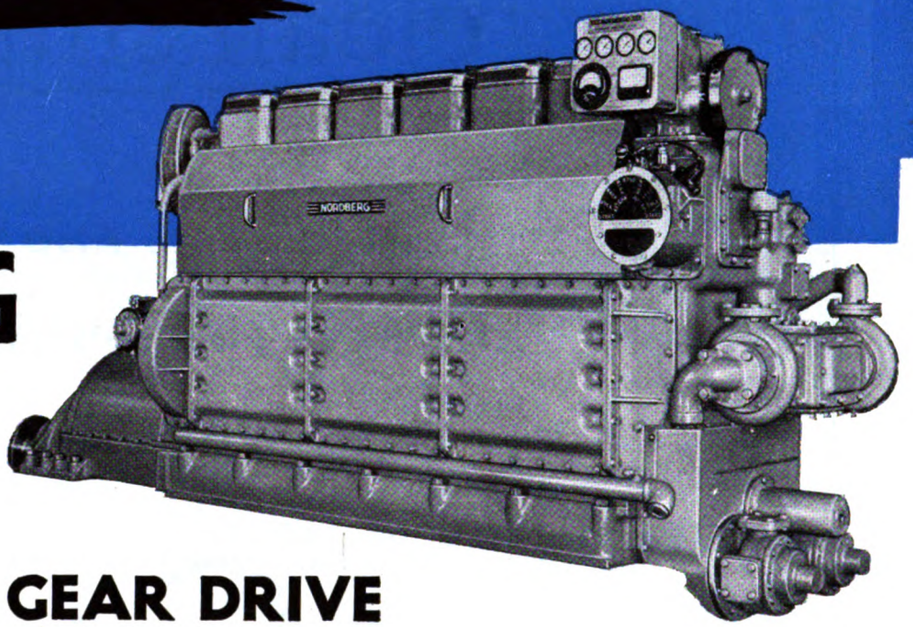
MORE POWER in LESS SPACE!

. . . by using

NORDBERG DIESELS with REDUCTION GEAR DRIVE



Why lose money on a direct drive complex? Stop and consider how much valuable space and weight you can save by using a smaller, more compact, reduction-gear engine as compared with a bulky, slow speed, direct drive main propulsion unit. Less engine space means more room for pay load, more room for fuel oil tanks — and with smaller, moderate-speed engines, driving through dependable reduction gears, you can swing the same size or larger wheels without sacrificing any power or speed.

Nordberg 4-cycle Marine Diesels are built in a wide range of sizes to meet the demands of all types of heavy-duty fishing craft, work boats and tugs. It will pay you to consider the space and weight saving advantages offered by Nordberg Diesels, for powering new hulls or repowering existing vessels. *Write for Bulletin 154.*

NORDBERG Four-Cycle Diesel Marine Engines are built in 6, 7 and 8-cylinder models, in 9" x 11½" and 13" x 16½" sizes — supercharged and non-supercharged, delivering from 265 to 1350 B.H.P. Available in 2:1 and 2.5:1 reduction-gear ratios.

As a typical example of a main propulsion power application, take the Nordberg 6-cylinder, 9" x 11½" non-supercharged Diesel, delivering 330 B.H.P. at 750 R.P.M. through a 2.5:1 reduction gear . . . which means a shaft speed of 300 R.P.M., with ample power to swing a large diameter propeller with excellent propulsion efficiency.

NORDBERG MFG. CO. MILWAUKEE 7, WIS.

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NORDBERG DIESEL ENGINES

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ELIMINATE SMOKE AND SOOT

AND SAVE PRECIOUS FUEL

WITH

HAGAN

Automatic Combustion Control

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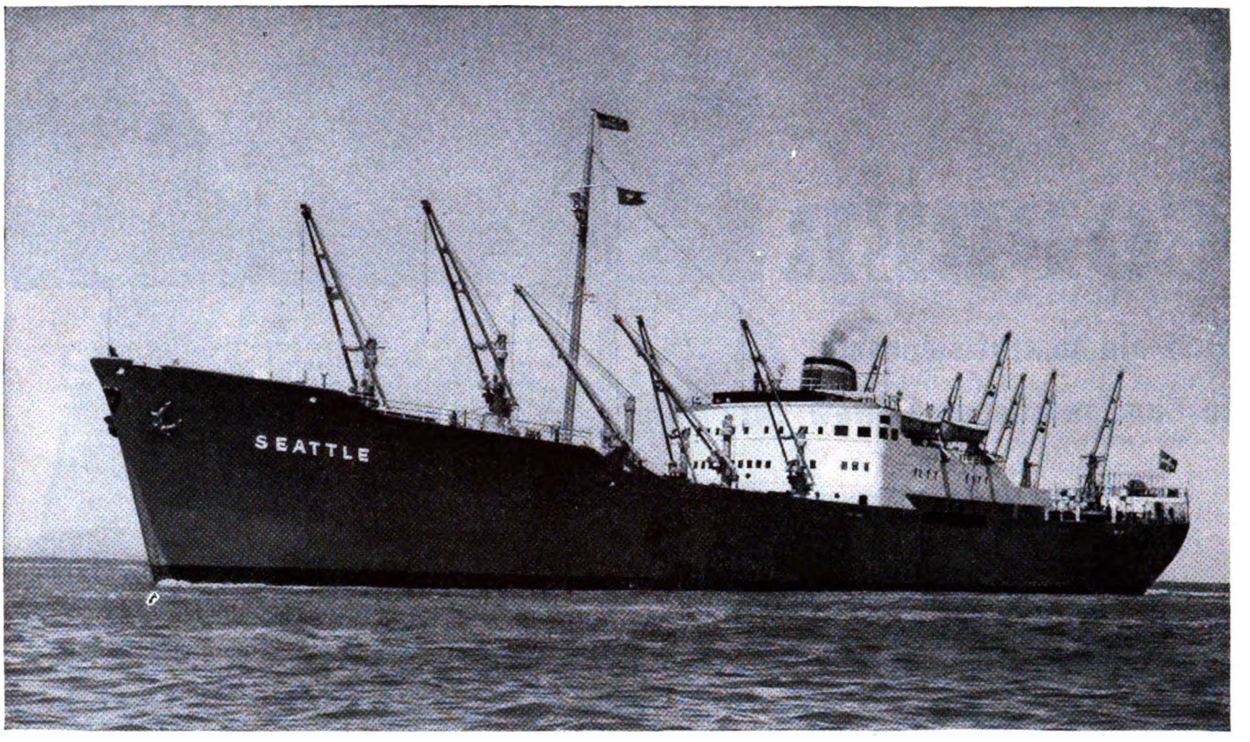
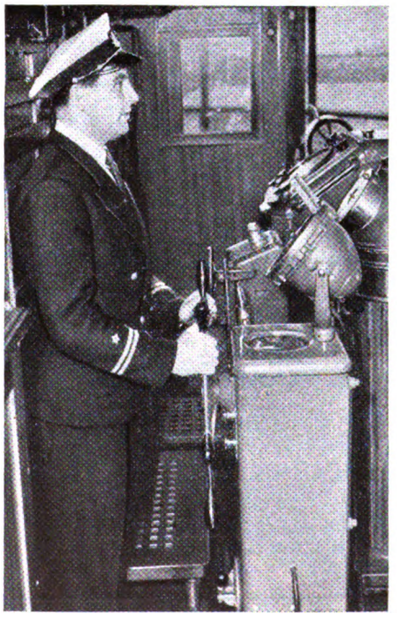


Built for Speed...

EQUIPPED BY SPERRY TO MAINTAIN SPEED

⚓ The Swedish Johnson Line's MS SEATTLE and her two sister combination passenger-cargo ships are *built* and *powered* for speed...and Sperry modernized instruments help these liners to proceed on schedule through fair weather or foul.



⚓ One instrument — Sperry Radar — keeps them proceeding in fog, smoke, rain, darkness. For example, Captain Oscar Gedda of the MS SEATTLE said that during his last trip to Dover, England, he was able to pass 25 fog-bound ships which were clearly indicated on the Sperry Radar scope.

⚓ A second instrument — Sperry Gyro-Compass — speeds schedules by providing accurate true-North indications for the straightest, shortest course...a third instrument — Sperry Gyro-Pilot — by steering that course automatically. The Gyro-Pilot installed in the Swedish Johnson liners is especially designed for vessels equipped with all-electric steering.

⚓ Still a fourth navigational time-saver, the Sperry Mark II Loran, is soon to be installed aboard the Swedish Johnson liners. This new loran gives the navigator position any time, in all weathers, anywhere within range of loran signals from land-based transmitting stations. Also conserves space, greatly simplifies operation, gives more dependable readings.

⚓ The dependable functioning of these instruments reflects Sperry's many years of experience in precision manufacture of marine equipment... and is backed by Sperry's world-wide service organization.

SPERRY GYROSCOPE COMPANY

DIVISION OF THE SPERRY CORPORATION • GREAT NECK, N. Y.

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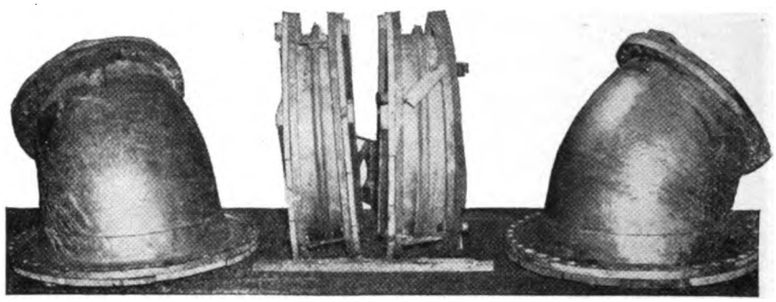


First aid to craftsmanship in Camden shops of "New York Ship"

THESE examples of coppersmithing at Camden, N. J. shops of the New York Shipbuilding Corporation, are dramatic reminders of the twin properties of ready workability and corrosion resistance that make the red metal indispensable to marine construction.

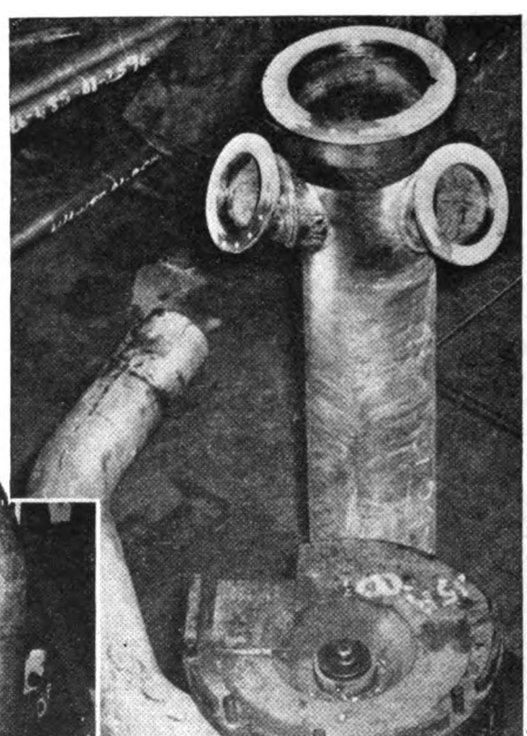
Here is workability that means easy bending, flaring or tapering. Soldered or brazed joints are strong, easily and quickly made. Added to high corrosion resistance is the fact that copper, when used for salt water lines, remains free from barnacles. 48120

Below:
In the 14" pipe assembly in the left foreground, the spherical dome is hand-wrought from a single piece of heavy sheet copper. The four hand-wrought 8" pipe branches and large flange are brazed to the dome, as are the two hand-wrought expansion joints. The two branch flanges are silver-alloy brazed.

The pipe assembly with two branches is fabricated in the same manner, except that the branches are formed from 8" seamless tube. The expansion joint in the foreground (center) is also hand-wrought from copper tube. The pipe assembly (right) with the expansion joint brazed to the pipe is swaged at one end. The bronze flanges are silver-alloy brazed to the pipe.

Above:
Units shown here are for sea water lines. The reducing elbows are 33" x 26", hand-wrought from ¼" copper and brazed together to form the shell. The ends are flanged and riveted to steel rings. The expansion joints in the center of the photo are fabricated in the same manner as the elbows.

Below:
This assembly will convey boiler feed water at 250°F. Main section (standing) is 14" pipe section, hand-wrought from sheet copper .120" thick with a brazed seam. End flanges are also brazed to the pipe. Branch fittings are fabricated from 8" seamless drawn copper tube, brazed to the 14" pipe. Branch end flanges are silver-alloy brazed.



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from mine to consumer
Anaconda
COPPER
THE AMERICAN BRASS COMPANY
General Offices: Waterbury 88, Connecticut
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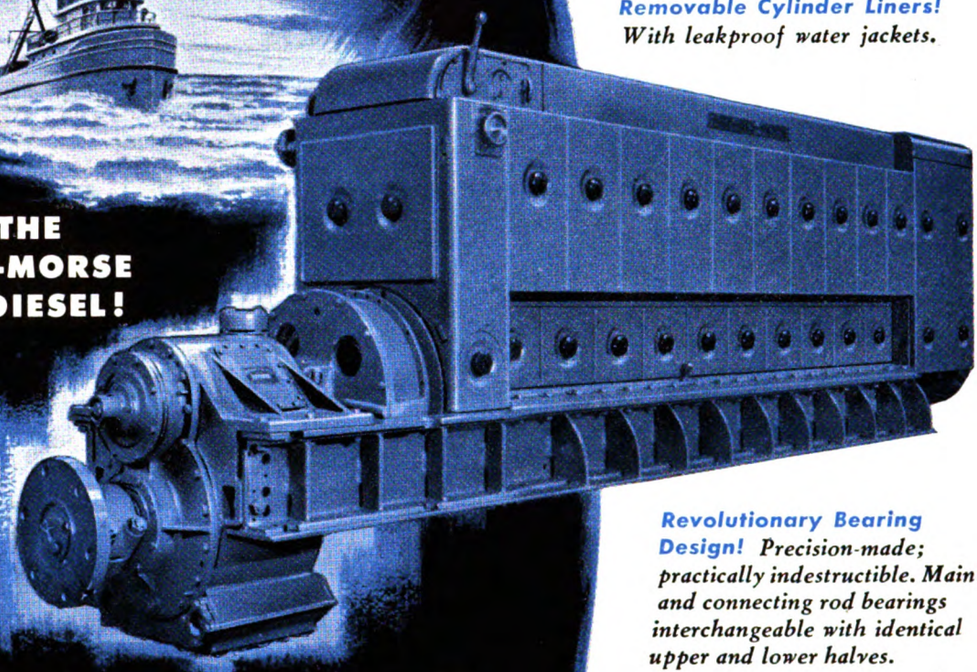
"Water-born"

THAT'S THE FAIRBANKS-MORSE MODEL 31 DIESEL!



these advantages are Yours with a Model 31

Larger, More Efficient Propellers! *Because the Model 31 has extra large, sturdier reduction gears to take severe strains with direct-drive stamina.*

Removable Cylinder Liners! *With leakproof water jackets.*

Revolutionary Bearing Design! *Precision-made; practically indestructible. Main and connecting rod bearings interchangeable with identical upper and lower halves.*

Simplified Control! *Pneumatic finger-tip remote controls to sailing clutch and forward end power take-off.*

Cool Running! *Pistons, heads, ring sections and skirts—are oil-cooled.*

Full Pressure Lubrication *to all moving parts!*

Horsepower Ranges *from 175 to 500: Available with all required power auxiliaries.*

Service Facilities *through widespread Fairbanks-Morse service organization.*

Born and built for propulsion or marine generating service—that's this Model 31! Here's one Diesel that speaks a mariner's language, with sea-going advantages that show up in fast, low-cost hauls of those heavy loads . . . in quick, positive starting and responsive controls that mean swift maneuvering when it's needed most! Here's power aplenty for screw, winch, pumps and other auxiliaries.

FAIRBANKS-MORSE

A name worth remembering

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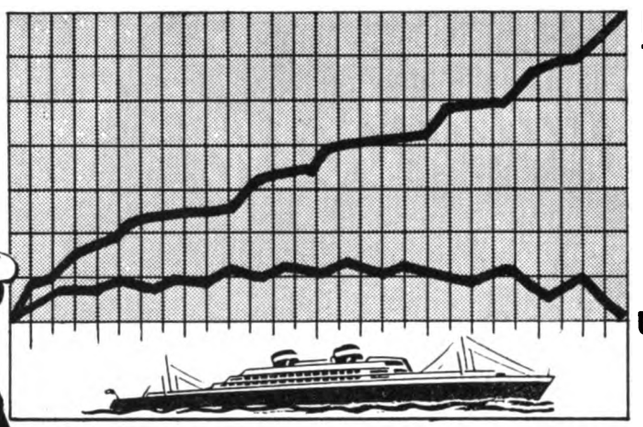
SAVE - UP TO *95% ON TANK CLEANING COSTS
- ON FUEL OIL CONSUMPTION
- ON MAINTENANCE & REPAIRS

"Confidentially," say many engineers and ship conditioning experts, "Fuelkleen is MORE than a chemical cleaner. It's proved different and better."



FUELKLEEN

A test will soon show you the superior performance of Fuelkleen in removing the sludge, foreign matter, oil and water emulsion that reduce fuel efficiency. It will show you how an efficient Fuelkleen job frequently can be done at a cost of *5% (or even less) of manual cleaning. And with the use of Fuelkleen there is absolutely no waste of oil, nor are there any sludge-removal problems. *You get the utmost BTU efficiency from your oil for both steam and diesel power!*

Economical, easily-applied Fuelkleen breaks up and dissolves sludge, dirt and gummy deposits in tanks, pipe lines, and preheaters. In diesel engine operation, Fuelkleen keeps rings and nozzles clean and produces a better spray pattern, resulting in better combustion. Fuelkleen eliminates water in oil emulsions and sludge; protects against pitting and corrosion; eliminates dirt, saves oil, where tanks are used alternately for fuel and water ballast. Fuelkleen assures maximum efficiency and economy in fuel atomization and combustion.

Fuelkleen's outstanding effectiveness is due to the fact that it is not a "conventional" chemical cleaner or cleaning process. Its formula and the resultant chemical action neutralizes and dissolves sludge; reclaims its oil content. At the oil and water level, Fuelkleen's chemical action lowers rather than raises the surface tension. The globules are enlarged; water and oil separate. The oil is reclaimed. Fuelkleen will not injure metals and is non-explosive.

The comprehensive 20-page Sumco manual describes and diagrams the Fuelkleen process, and covers many other phases of ship cleaning. Write for it on your business letterhead.

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BROOKLYN 31, N. Y.

Sumco PRODUCTS INC.

178 FREMONT STREET
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Manufacturers of **FUELKLEEN • TUBEKLEEN • HEATERKLEEN • AQUAKLEEN • OILKLEEN • SUMCO SUDS**

REPRESENTATIVES: Power Engineering and Supply Co., Seattle 4, Washington; Sumco Products Agency, San Pedro, California; Western Ship Service Co., San Francisco 5, California; Boiler & Engineering Service & Supply Co., Portland 9, Ore.; Galveston Ship Supply Co., Galveston, Texas; Galveston Ship Supply Co., Houston, Texas; Gulf Coast Marine Supply Co., Mobile, Ala.; Interstate Sales and Supply Co., New Orleans, La.; T. Roddy Lanigan Co., Miami, Florida; Hal F. Sterne Company, Charleston, South Carolina.

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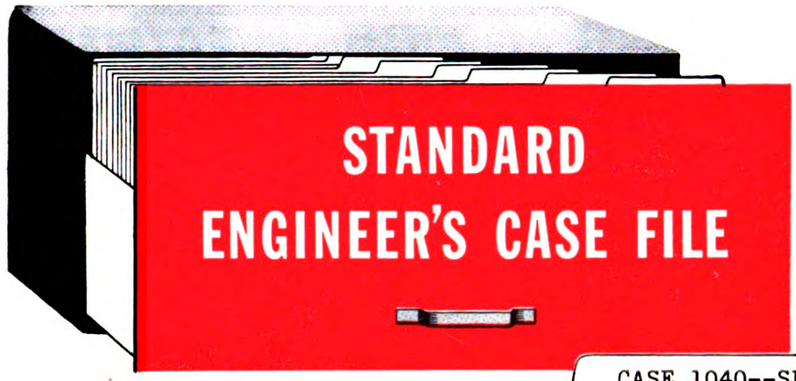
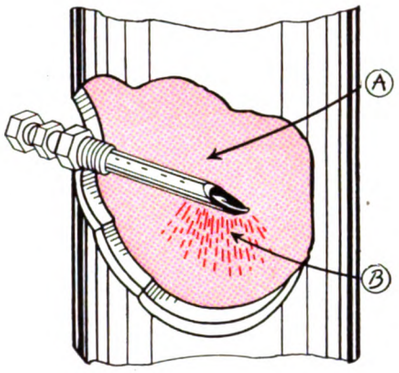


CASE 1040--SECURING SAFE LUBRICATION IN STEAM ENGINES IN WIDE RANGE OF CONDITIONS.



LUBRICANT ATOMIZING QUILL

Compounded Calol Cylinder Oil — 155PX provided adequate lubrication with freedom from carbon in various steam engines operating with temperatures from 375° F. to 550° F. Made from 100% Pennsylvania steam cylinder oils and special acidless tallow oil. Medium viscosity grade.

A. Economical in steam conditions from saturated to moderate superheat.

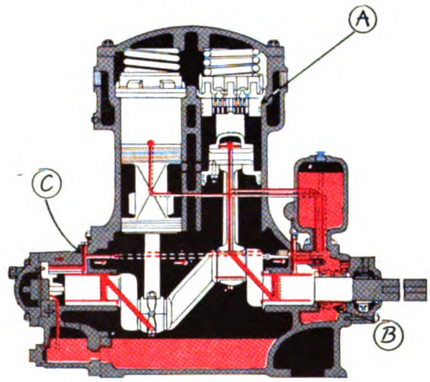
B. Atomizes readily in steam.

Calol Cylinder Oil — 155PX will separate easily from exhaust steam and condensate where adequate oil separators and skimming equipment are installed.

Calol Cylinder Oil — 155PX is one of a complete line of steam cylinder and valve oils produced by Standard of California.

CASE 1044--SECURING LONGER SERVICE FROM LUBRICANT IN REFRIGERATOR COMPRESSORS.

REFRIGERATOR COMPRESSOR WITH FORCE-FEED OILING SYSTEM



Highly stable Calol Ice Machine Oils provided outstanding lubrication and met all other conditions in different compressors where all types of refrigerants were used. They separated rapidly from water. Come in five grades: 9 and 11 are recommended for ammonia compressors, 14 for carbon dioxide machines and centrifugal units using Carene, Freon, etc., and some ammonia compressors, and 10W and 13W for household refrigerators requiring colorless, odorless oils.

A. Will not form injurious deposits .. will stick on bearing surfaces, reduce wear and maintain good piston-ring seal.

B. Assure efficient seal in stuffing boxes.

C. Have extremely low pour points - circulate freely ... drain readily from coils and condensers.

Calol Ice Machine Oils are fully dehydrated and have high di-electric strength.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20, California.

RPM CALOL

FOR EVERY NEED A **STANDARD OF CALIFORNIA** JOB-PROVED PRODUCT

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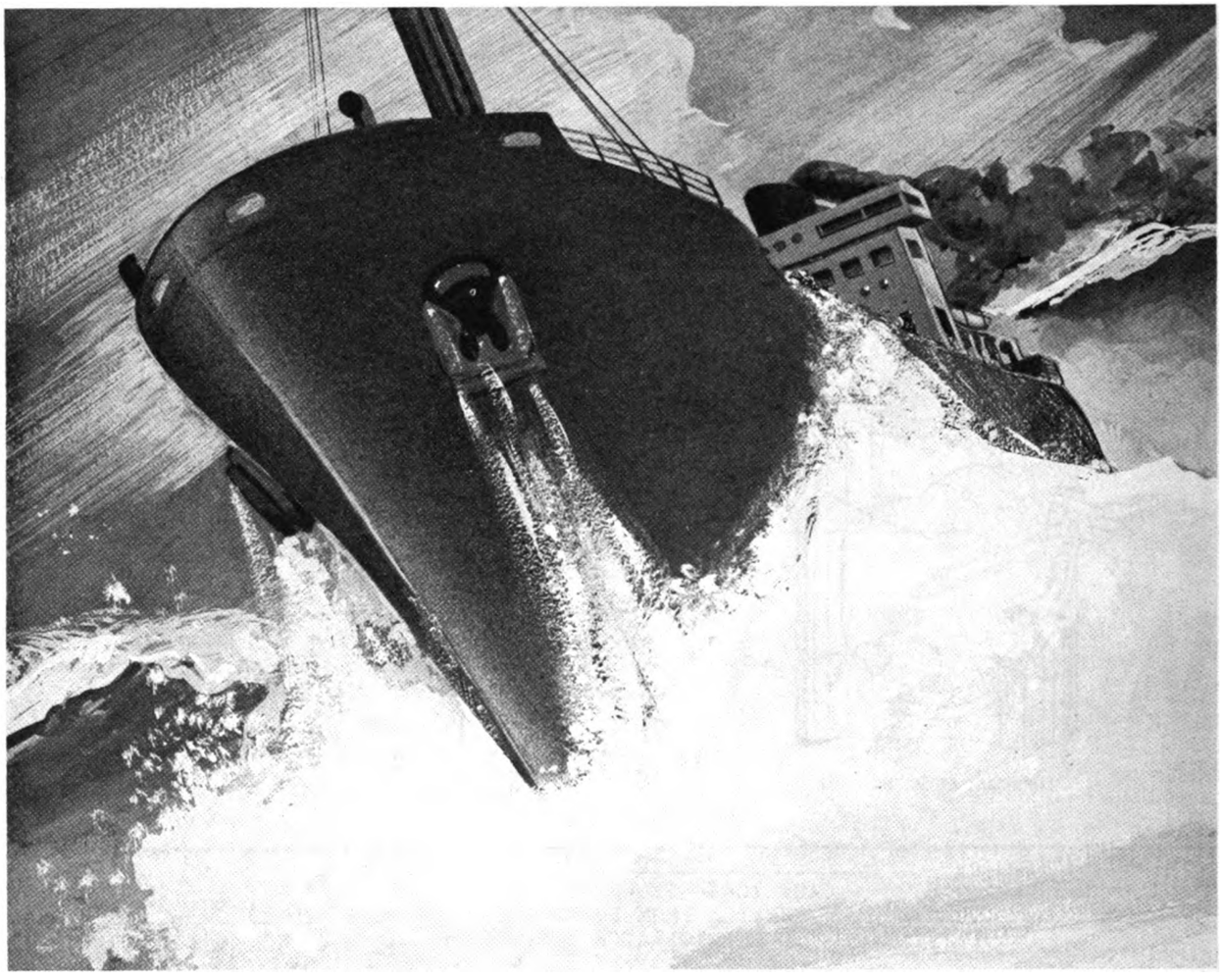
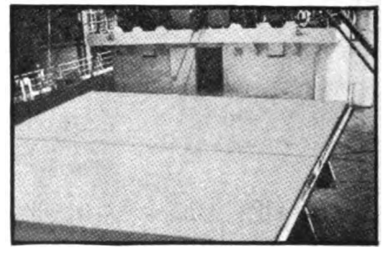
. . . ARE YOU PAYING FOR THIS WEATHER?





Not if you're using Seaboard Quick Opening Hatchcovers. Why keep footing the bill year after year for broken hatchboards and leaking tarpaulins? Why take the risks to personnel that go with the continual securing of old-fashioned hatchcovers? Seaboard Hatchcovers wipe out these losses

See **SEABOARD** *for*

Quick Opening Watertight Hatchcovers

SEABOARD MACHINERY CORP.

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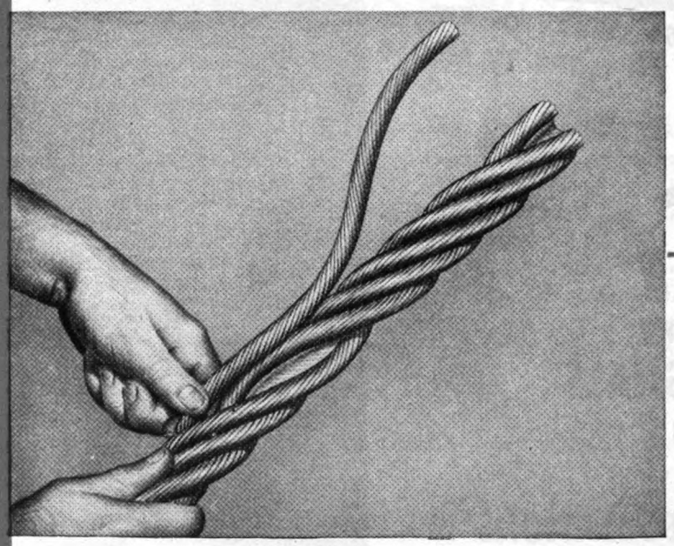

ATOP THE WORLD'S TALLEST BUILDING . . . yet not high enough! Television's need for unobstructed, long-range broadcasts may be met by planes in the stratosphere, relaying signals from the earth. Engineers working on this problem are confident of ultimate success.

With like confidence, Roebling blazes new trails in developing and making products vital to communication and all other industries. And the widespread confidence reposed in Roebling is our most guarded asset. Leadership is maintained only by constant progress . . . our ideal is to make Roebling products and engineering service the best obtainable anywhere, *any* time.

WHEN TO SPECIFY ROEBLING *Preformed* WIRE ROPE

WHEN IT WILL SAVE YOU MONEY is the time to specify Roebling Preformed Wire Rope. Wherever wire rope is subjected to severe bending, Roebling Preformed is an outstanding money-saver. On thousands of installations it lasts far longer than Non-Preformed ropes . . . pulls down performance costs to an all-time low.

Great resistance to fatigue from bending helps give Roebling Preformed a long life, but you can chalk up other big advantages. Preformed is not inclined to twist and kink . . . is easy to handle and install. It can be cut without seizing. Broken wires lie flat . . . don't injure hands or chew up drums and sheaves.

Get your Roebling Field Man's advice about Preformed and the possibility of its saving you money. You can act on his suggestions with full confidence for he *knows* wire rope, how to choose the *right* one, how to maintain it for top service. Write or call him at your nearest Roebling branch office.

JOHN A. ROEBLING'S SONS COMPANY
OF CALIFORNIA
San Francisco Los Angeles Seattle Portland

A CENTURY OF CONFIDENCE ROEBLING

JR ROEBLING

★ *WIRE ROPE AND STRAND* ★ *FITTINGS* ★ *SLINGS* ★ *SUSPENSION BRIDGES AND CABLES* ★ *AIRCORD, AIRCORD TERMINALS AND AIR CONTROLS* ★ *AERIAL WIRE ROPE SYSTEMS* ★ *ELECTRICAL WIRE AND CABLE* ★ *SKI LIFTS* ★ *HARD, ANNEALED OR TEMPERED HIGH AND LOW CARBON FINE AND SPECIALTY WIRE, FLAT WIRE, COLD ROLLED STRIP AND COLD ROLLED SPRING STEEL* ★ *SCREEN, HARDWARE AND INDUSTRIAL WIRE CLOTH* ★ *LAWN MOWERS*

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Memo to Ship Operators

Revised U.S.C.G. Regulations covering Distress Signals (Federal Register Oct. 31, 1947) become mandatory on January 1, 1949.

The Revised Regulations provide, among other things, that all Distress Signals carried on your ships after January 1, 1949 shall conform to the new specifications for performance, water-tightness, etc., and shall bear approval number and date of manufacture under the new specifications.

For your own protection in ordering Distress Signals, be certain to specify that they shall be a type approved by the United States Coast Guard for use under the Revised Regulations after January 1, 1949.

Martin Dwyer

President, Aerial Products, Inc.

COMMERCIAL COUNTERPART OF THE STANDARD DISTRESS SIGNAL OF THE U. S. ARMED FORCES—SIGNAL (DISTRESS DAY AND NIGHT) AN-MARK 13 MOD 0

YNITE DISTRESS SIGNAL 3/5 actual . Note: Night Flare and Day Smoke als combined in opposite ends of water- t, double-wall, hermetically sealed l container only 5⅛" long, weighing than 7 oz.

DAYNITE

REG. U. S. PAT. OFF.

SMOKE FLARE

U. S. C. G. APPROVED SIGNALS

(APPROVAL NO. 160.023/1/0)

CONFORM TO THE REVISED REGULATIONS AND ARE LEGAL FOR USE NOW AND AFTER JANUARY 1, 1949.

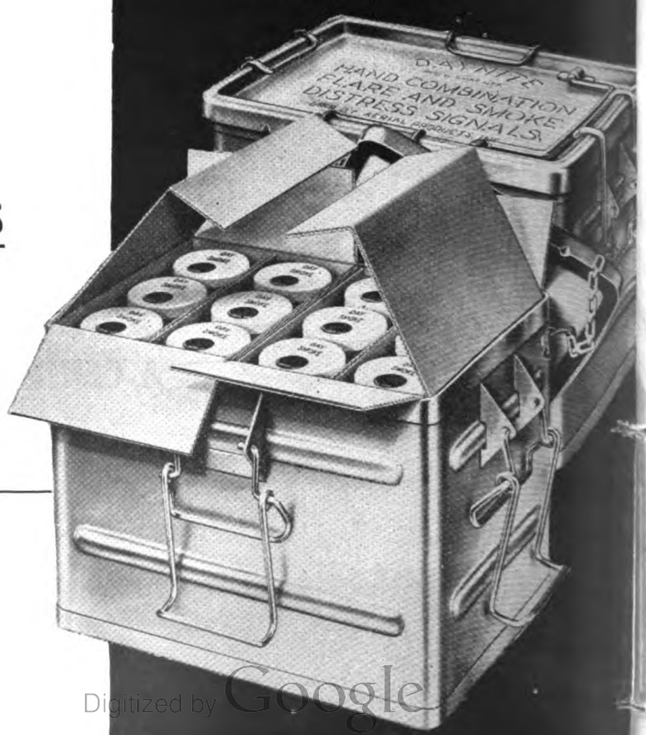
STOCKED BY SHIP CHANDLERS AT ALL PORTS

AERIAL PRODUCTS, Inc.

ELKTON, MARYLAND

WORLD'S LARGEST MANUFACTURER OF DISTRESS SIGNALS

(Below) DAYNITE brass container (open and closed) showing snap-action locking hooks for water-tight seal on rubber compression gasket. Container overall only 9⅜" x 6¾" x 6½"—less than ¼ cubic foot. DAYNITE container with its combination of 12 flares and 12 smoke signals takes less than 1/5 the cubic volume of space previously needed to stow 12 paper-wrapped fireworks-type flares and 4 bulky smoke pots.



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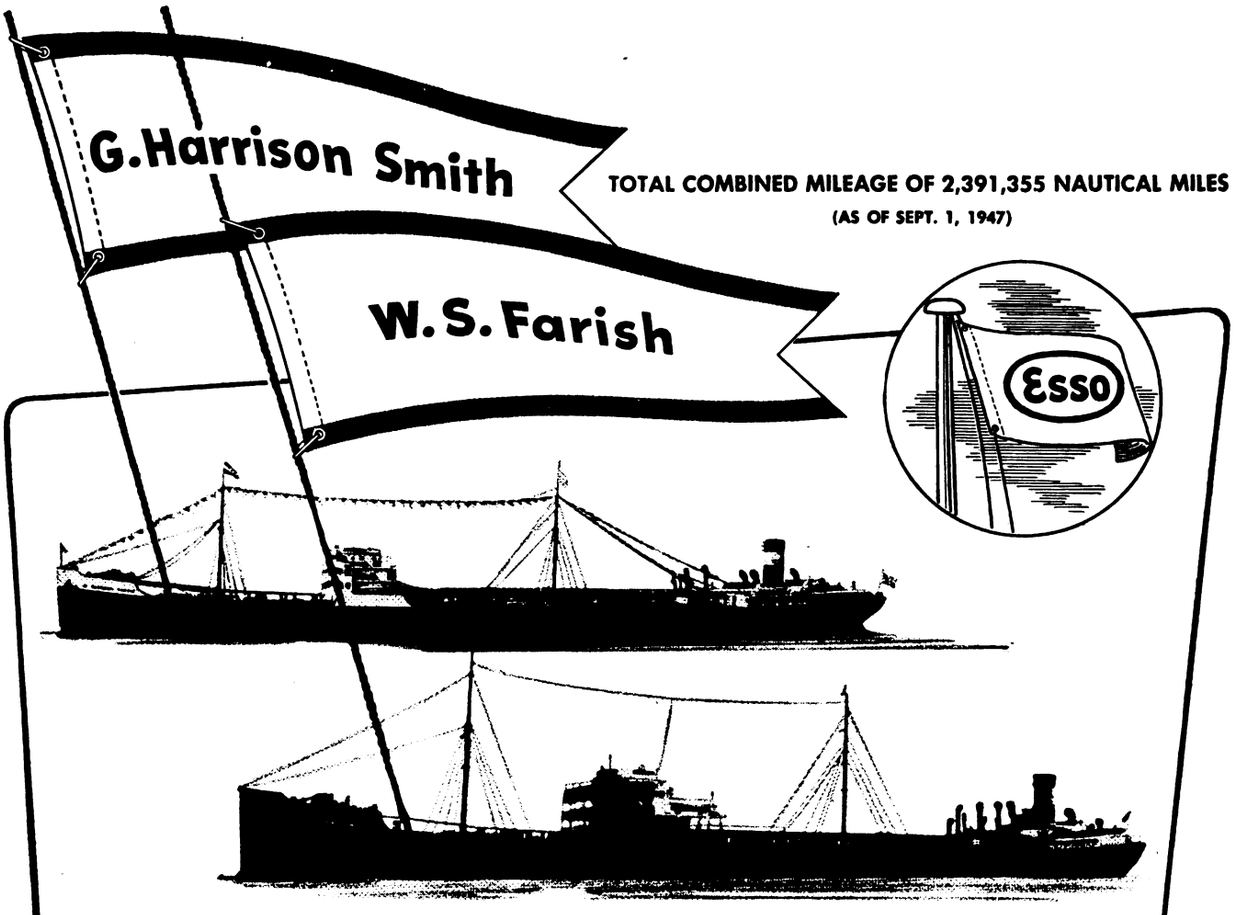

LOW-COST MILEAGE BY THE MILLIONS with B&W BOILERS

These sister ships — the first high-pressure, steam-turbine propelled tankers built in this country—have logged in 18 years a total mileage equal to 100 trips around the world, with steam supplied by B&W boilers. And they continue to render the low-cost performance that marked them the most efficient tankers afloat on their first voyages in 1930. Today, the original B&W boilers are maintaining a low-cost fuel consumption including that for cargo heating, of approximately 13 lbs. of oil per 1,000 ton-miles, and have proved equally economical in maintenance.

This is another instance of dependable, long-range, low-cost steam generation by B&W boilers. Let B&W's 70 years of marine boiler experience assist you in the development of boiler plans for ships of any type.

M-235

BOILERS FOR ALL TYPES OF SHIPS

★ ★ ★

OTHER B&W PRODUCTS — Seamless & Welded Tubes for All Pressure and Mechanical Applications . . . Refractories . . . Alloy Castings . . . Oil Burners . . . Chain-Grate Stokers . . . Stationary Boilers and Component Equipment . . . Chemical Recovery Units . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
GENERAL OFFICES: 85 LIBERTY ST., NEW YORK 6, N.Y.
WORKS: ALLIANCE AND BARBERTON, O.; AUGUSTA, GA.

ON THE PACIFIC COAST: C. C. MOORE & CO., 450 MISSION STREET, SAN FRANCISCO

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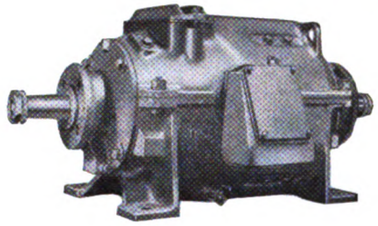
CUT COSTLY PORT TIME

WITH DEPENDABLE MARINE AUXILIARIES

The marine motors and control shown here are just a few units from the complete line of Westinghouse marine equipment. Whether for deck or underdeck applications, Westinghouse can supply auxiliary units whose low-maintenance characteristics will help to cut costly port time. Seaworthy and dependable, Westinghouse marine equipment stems from half a century of experience in designing and building for the marine industry. Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

WESTINGHOUSE DECK AUXILIARY MOTORS AND CONTROL

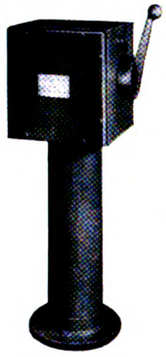


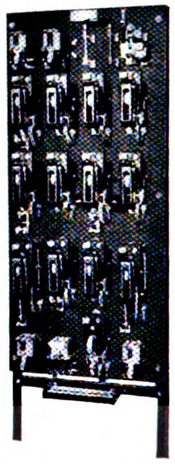
Type CK D-C Marine Motors

Type CK motors are totally-enclosed, waterproof units particularly suitable for such marine applications as cargo winches, windlasses, capstans, mooring winches, boat hoists and similar applications requiring reliable, rugged motors with heavy overload capacity, quick starting, stopping and reversing characteristics.

D-C Master Control Switch

Pedestal-mounted master control switches are constructed to withstand moisture whether from direct contact with heavy seas or internal condensation. Dependable, trouble-free service is assured with maximum ease of operation.

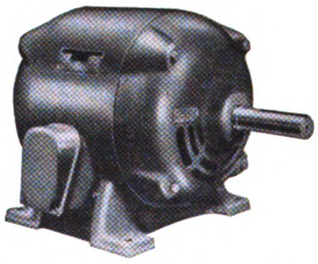




D-C Magnetic Control Panel

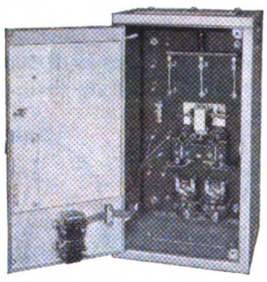
Designed for mounting below deck or in deckhouses, these control panels assure dependable operation and protection of equipment.

WESTINGHOUSE UNDERDECK AUXILIARY MOTORS AND CONTROL



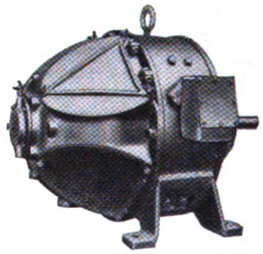
Type CSP Dripproof-Protected, Life-Line Motors

These squirrel-cage induction motors provide smooth operating characteristics, low maintenance, and easy installation. Of steel construction throughout, Life-Line motors are lighter and more compact with maximum strength and rigidity. Pre-lubricated bearings seal grease in—dirt out—and eliminate need for periodic lubrication.



A-C Linestarters

These magnetically operated line-starters provide dependable control for all a-c, squirrel-cage induction motors. Specifically designed for marine service, they are available with dripproof or watertight enclosures.



Type SK Dripproof Marine Motors

The most popular marine d-c motor for over 35 years, the type SK is recommended for all underdeck and engineroom applications such as centrifugal, rotary and reciprocating pumps, fans and blowers, steering gears, compressors, engine turning gears, machine tools, and refrigerating equipment.

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AND TIMESAVING MARINE SERVICE

Here's a marine service program on a scale unmatched in the industry. It offers you convenient, simplified maintenance . . . a better way to cut idle time in port . . . extra assurance of profitable operation.

This broad Westinghouse marine service program is actually composed of six separate services co-ordinated to bring you maximum benefits. These services include:

1. Port Engineers in Eleven Major Ports . . . experienced, trained counsel (at the ports listed below) to help you expedite inspection, engineering and repairs.

2. Skilled Steam and Electrical Service Engineers . . . convenient to any port, to handle repairs or supervision of repairs on shipboard.

3. Six Marine Warehouses . . . convenient to any port, with a wide variety of marine repair parts to help speed "turn-around" in port.

4. Sixteen Repair Shops . . . near every U. S. salt water or fresh water port, for quick, complete, long-lasting repair on all types of marine equipment.

5. Unit Exchange Stocks . . . emergency exchange service on a-c motors . . . d-c motor and generator armatures. Units are new or rebuilt and fully guaranteed.

6. Ship Surveys and Inspection . . . a service provided on a "spot" or periodic basis to check condition of all steam and electrical equipment, recommend necessary adjustments and maintenance, and to locate potential troubles before they develop.

For help on any marine equipment problem, call your Westinghouse Port Engineer. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-93448

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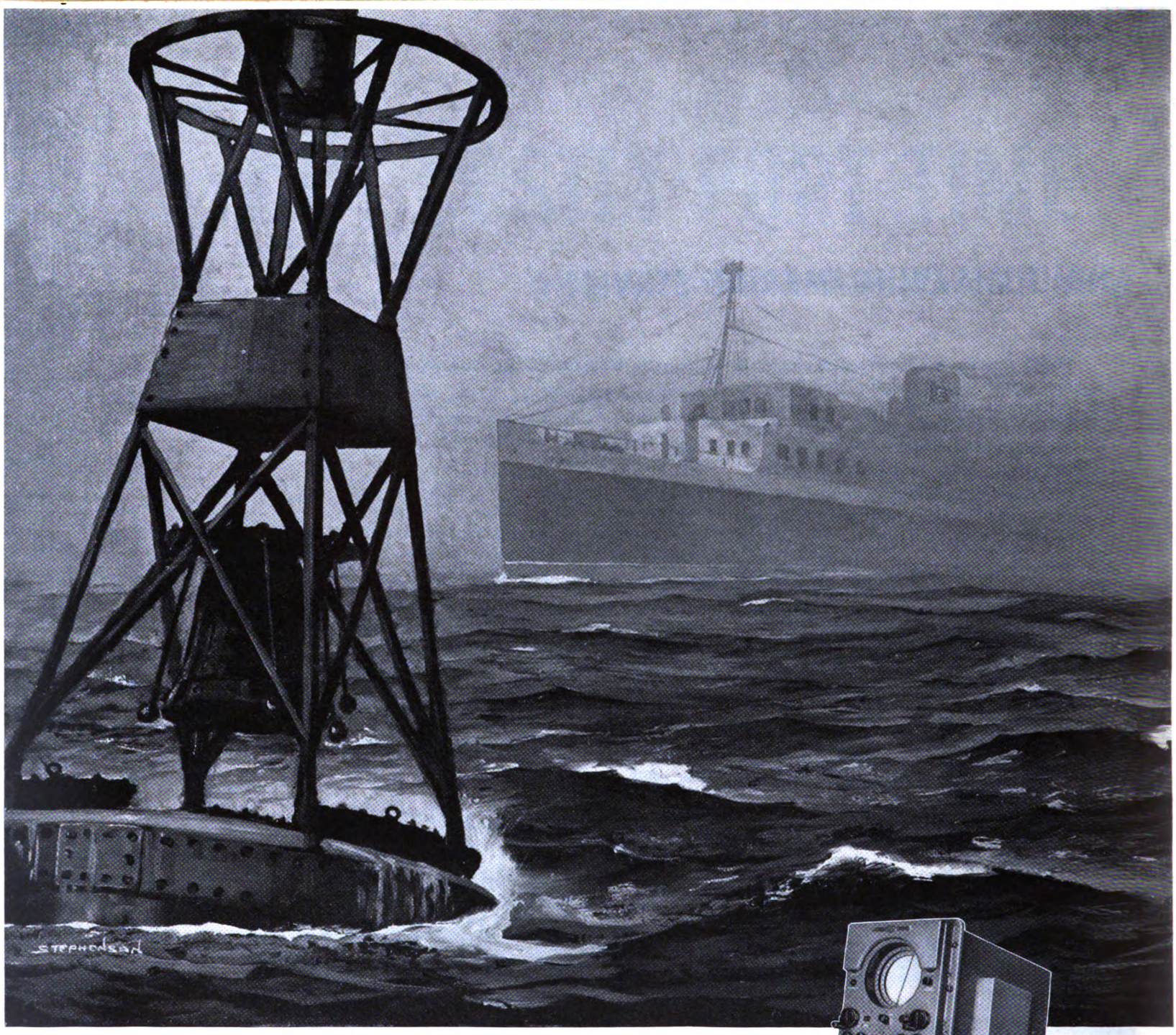

Mariners Pathfinder* Equipped S. S. Yarmouth

maintains tight "3-round trip per week schedule" despite heavy fogs

During the periods when pea soup shrouds Nova Scotia . . . and dirty weather engulfs Boston Harbor, the S. S. Yarmouth is able to keep a close schedule on its Boston-Yarmouth, Nova Scotia run during the summer.

Your ships can also navigate safely in all kinds of weather with Mariners Pathfinder radar. Mariners Pathfinder picks out buoys, other vessels and shore lines. It warns of approaching storms and obstacles that may cause disaster. Protect your valuable ships, crew and cargo by installing a Mariners Pathfinder radar on your vessels.

Raytheon gives you unbiased advice on the type best suited to your requirements—10 cm for ocean going vessels . . . 3 cm for inland lakes and rivers. Raytheon's sales and service offices are located in principal ports. They are staffed by radar specialists . . . ready to serve you day and night. Write for information.

*"Mariners Pathfinder" is the trademark of the Raytheon Manufacturing Company denoting its commercial search radar.

United States Sales and Service

RAYTHEON MANUFACTURING COMPANY

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and

MACKAY RADIO & TELEGRAPH COMPANY

345 Hudson Street, New York, N. Y.

Export Sales and Service **RAYTHEON MANUFACTURING COMPANY**

50 Broadway, New York, N. Y., U. S. A.

RADAR

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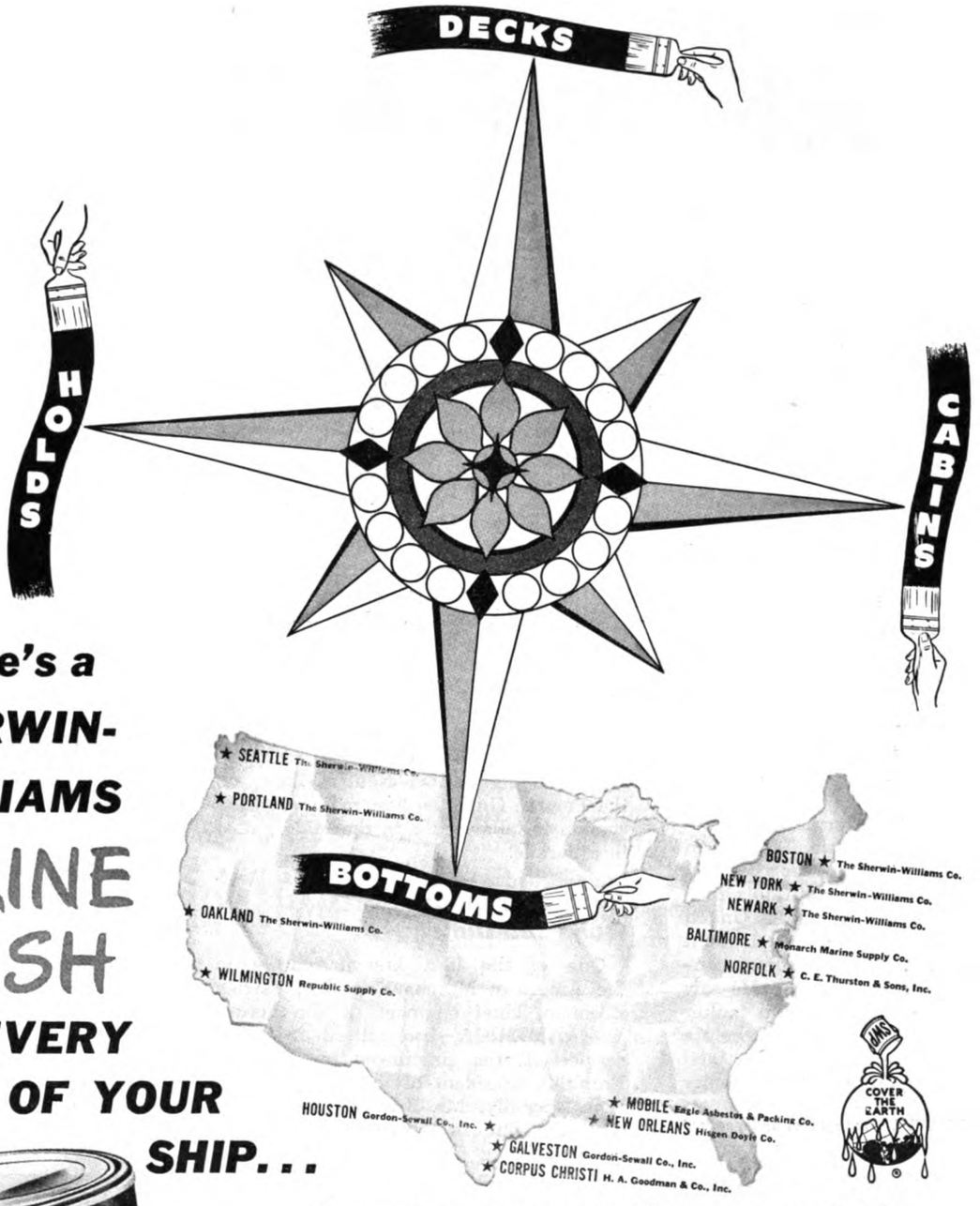

There's a SHERWIN-WILLIAMS MARINE FINISH FOR EVERY PART OF YOUR SHIP...

—at every one of these ports!

Looking for the finest paint money can buy? There's a stock of service-proved Sherwin-Williams Marine Finishes at ports on both coasts and the Gulf of Mexico! Want to paint your Decks with durable weather-tested finishes?—ask for Sherwin-Williams . . . your Holds?—ask for Sherwin-Williams . . . your Cabins?—ask for the same brand . . . Bottoms?—again it's Sherwin-Williams.

From Seattle to New Orleans, from Boston to Houston—you can get for your ships the best Marine Finishes made by the world's largest paint manufacturer! The Sherwin-Williams Co., Marine Division, Cleveland 1, Ohio. (Export Division, Newark, N. J.)

Products of SHERWIN-WILLIAMS Industrial Research

SHERWIN-WILLIAMS MARINE FINISHES

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SHAFT ALLEY Chatter

T. C. Conwell Becomes Manager Of Independent Tankships

Appointment of Captain T. C. Conwell, widely-known east coast tankship operator, as manager of Independent Tankships, Inc., wholly owned subsidiary of the American Independent Oil Company, has been announced at San Francisco by Ralph K. Davies, president of American Independent.

Captain Conwell will act both as an executive assistant to President Howard F. Fletcher of Independent Tankships, and as a consultant in shipping and transportation matters for American Independent. He will divide his time between the offices of both companies in San Francisco, and quarters at 30 Broad Street, New York City.

Captain Conwell was formerly operating manager, marine division, American Trading and Production Corporation. Prior to his employment with this firm he served with distinction in the United States Navy, rising from a lieutenant commander in 1942 to the rank of captain before the end of the war. He saw active service in connection with tanker operations in the Mediterranean before and after the invasion of Sicily, and later was tanker operations officer under Admiral Nimitz in the Pacific. In 1945, Captain Conwell was cited by Admiral Nimitz for meritorious service in connection with operations while in charge of the fuels and lubricants section, logistics division, on the Admiral's staff.

Prior to the war, Captain Conwell served for 18 years in merchant ships. From 1930 to 1942 he was employed by the Cities Service Oil Company of New York in various capacities ranging from chief officer to port captain.

Captain Conwell will be in direct charge of the six ocean going tankers owned by the corporation. American Independent Oil Company, parent organization of Independent Tankships, recently obtained the concession to the Sheikh of Kuwait's undivided half interest in the Kuwait-Saudi Arabia Neutral Zone, on the Persian Gulf, the first major oil concession to be awarded in the Middle East in a decade.

CAPTAIN T. C. CONWELL, Manager of Independent Tankships, Inc.

⚓ ⚓ ⚓

Patrick Brennan Quits Sea Duty

One of the best known officers in the American Merchant marine, Patrick Brennan, chief engineer of the luxury liner AMERICA, has retired from sea service, it was announced by John M. Franklin, president of the United States Lines recently. Mr. Brennan will remain with the line in an advisory capacity, his post being filled by William Kaiser.

Mr. Brennan has 46 years of sea service, is a veteran of both world wars and holds the rank of captain in the Naval Reserve. He joined the staff of United States Lines in 1920 as chief engineer of the old AMERICA.

Mr. Kaiser, who succeeds Mr. Brennan, entered the Line's service in 1923 as an oiler on the famous LEVIATHAN. He was assigned to the AMERICA as first assistant engineer in May.

⚓ ⚓ ⚓

Pan-Atlantic Announces Express Cargo Service

An express cargo service from New York to Miami and to Tampa, Florida, was inaugurated recently by the Pan-Atlantic Steamship Corp., a subsidiary of the Waterman Steamship Corp. Sailing time between New York and Miami will be reduced to 62 hours and to 33 hours between Miami and Tampa, totaling 95 hours between New York and the Gulf Port.

Appoint Captain Jacobsen To Command "Ace" EXETER

Captain Burnt A. Jacobsen of Staten Island, New York, has been put in command of the ss EXETER, one of American Export Lines new "4 Ace" passenger liners, it was announced recently.

The EXETER was delivered to the company by the Maritime Commission November 3. She is registered at 9644 gross tons, is 473 ft. long, 66 ft. breadth and steams at 16½ knots. Like its new sister ships, it has modern air-conditioned accommodations for a maximum of 125 passengers, all first class. Cargo capacity is 4400 tons in six holds.

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F. C. Ninnis New President Of Ocean Agencies, Ltd.

With the closing of their Pacific Coast offices Shepard Steamship Company have appointed Ocean Agencies, Ltd. in Los Angeles and San Francisco, as West Coast agents of the company.

F. C. Ninnis, Jr., formerly district manager for Shepard has joined Ocean Agencies as president of the firm.

CAPTAIN JOHN F. PAUL, who recently was named Pacific Coast port captain of States Marine Corporation, located at San Francisco. He moved to the west coast from New York, where he was in States Marine's operating department several years. Captain Paul is a Kings Point graduate and sailed as master for the American-South African Line. He is an expert diver, too.

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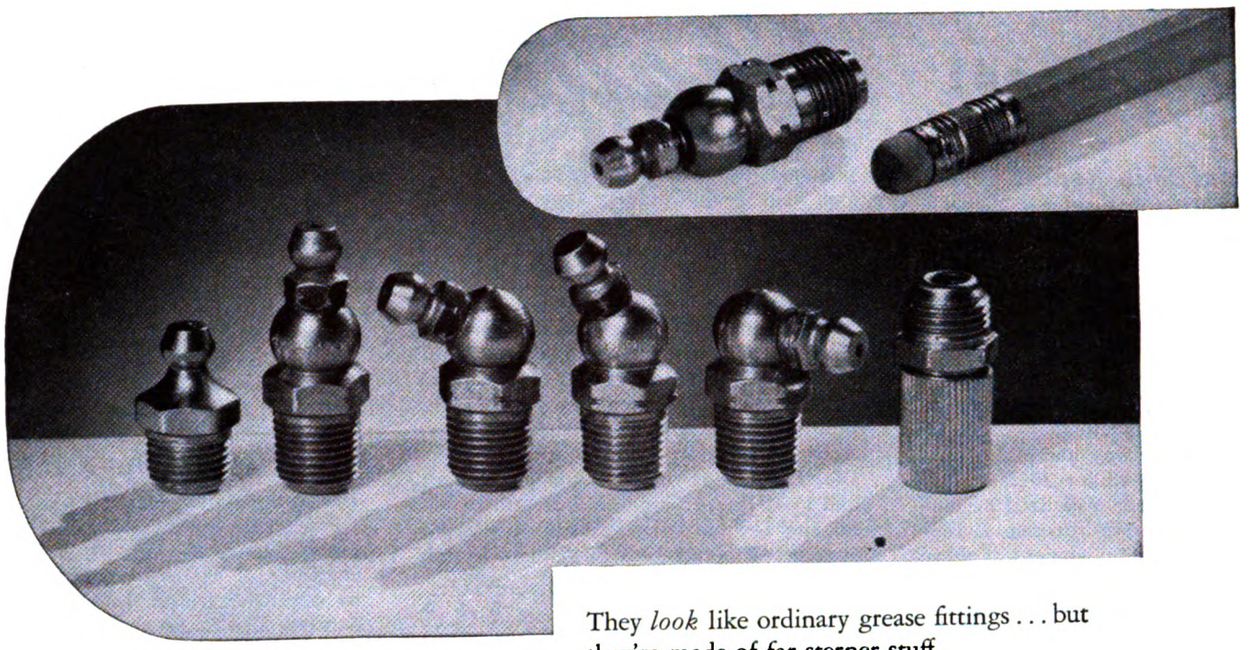

Short Story in metal selection

They *look* like ordinary grease fittings . . . but they're made of far sterner stuff.

These fittings are used on deck machinery and in corrosive industrial service. They cannot rust . . . corrosion won't plug 'em.

Each one is made of four different Inco Nickel Alloys . . . chosen for four different tasks.

Take the body of the fitting. It's threaded. So "R"* Monel is used for easy machining.

The tip, which fits into the mouth of the lubricating gun, must be hard and tough. Heat-treatable, easy-machining "KR"* Monel fills the bill here.

Inside, there's a heat-treated "K"* Monel stopper ball. Its hard surface will stay smooth and give good sealing for the life of the fitting.

And, keeping the ball tight against the opening, is a never-failing spring of Inconel*. A high modulus of elasticity gives this Inco Nickel Alloy the call here.

WHO MAKES THESE FITTINGS?

Manufactured by Stewart-Warner Corporation, 1826 West Diversey Parkway, Chicago, Ill., these corrosion-resistant Alemite grease fittings conform to rigid specifications for seagoin', pressure grease fittings. They must hold the lubricant at a pressure of 3000 psi with no appreciable leakage. Type A is standard for surface vessel use. Type B (with the never-failing Inconel spring) is specified for submarine service.

WHENEVER YOU *have a tough job for a metal, give it to one of the Inco Nickel Alloys. They're the "task metals" of industry!*

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N Y

INCO Nickel Alloys

Monel • "R"* Monel • "K"* Monel • "KR"* Monel • "S"* Monel Nickel • "L"* Nickel • "Z"* Nickel • Inconel* *Reg. U.S. Pat. Off.

EMBLEM OF SERVICE

"Task Metals" for Industry

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SHAFT ALLEY (continued) Chatter

Commercial Ship Repair Purchases San Francisco Yard

Purchase of Maritime Engineering Ship Repair, Bay and Taylor Streets, San Francisco, and operation of the facility as San Francisco Division, Commercial Ship Repair, has been announced by E. A. Black and J. J. Featherstone, co-owners.

Originally established at Pier 66, Seattle, Commercial Ship Repair purchased Winslow Marine Railway and Shipbuilding Company in December 1947, and in September of this year organized a complete ship repair plant at Tacoma. A record of successful accomplishment at those yards, including completion of a major portion of new construction work for commercial account on Puget Sound let by contract in 1948, encouraged company management to view the future of Pacific Coast shipping with optimism and to enter negotiations for the purchase of the San Francisco yard some months ago.

Work at the San Francisco division started with preparation of ss HERALD OF THE MORNING for towing to Everett where conversion work is to be completed by Everett Shipbuilding and Dry Dock Company for the account of Waterman Steamship Company. Simultaneously work was started on the Liberty JOHN BLAIR to prepare for return to Maritime Commission lay-up.

Named to head the San Francisco division are H. A. Cammann, general manager; Fred A. Finn, general superintendent; J. R. Featherstone, assistant manager; and Mabel Monson, office manager and comptroller.

With partners E. A. Black and J. J. Featherstone supervising over all four divisions they have named J. L. Sweetin, marine superintendent, and W. R. Geis, purchasing agent, at Seattle. At Winslow, Arthur Lindgren is assistant manager; Ole Lillehie is marine superintendent; and Fred Harper, chief accountant. Heading the Tacoma Division is Barney Trout as general manager, with William Plumb as marine superintendent.

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First Chinese Ship Calls at New Orleans

Maritime history was made in New Orleans last month when for the first time a Chinese ship with an all-Chinese crew called there to take on oil cargo.

The vessel, the ss TUNGPING of Shanghai, carried Captain C. C. Fei, his wife, their three white cats and a crew of 60. A sister ship of the TIEN LOONG, the Tungping is owned by the China Overseas Lines, Ltd., and is making "trial runs" according to Captain Fei. Both are former American ships, the TUNGPING having once been the JACOB LUCKENBACH, according to the Captain.

Twelve more ships have been ordered for delivery to China, Captain Fei said, pointing out the maritime companies there hope to increase the present one-half million tonnage to three million tons.

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Chas. Christian Named Matson Superintending Steward

Matson Navigation Company announces the appointment of Charles L. Christian to the new post of superintending steward. Frank P. Cannon continues as port steward. Mr. Christian was with Matson 18 years, fourteen of which were as chief steward on the ss MATSONIA. At the end of the war he resigned and for the past 14 months has been manager of the Arlington Club, Portland, Oregon.

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West Coast Naval Architects Inspect Mare Island

Joseph A. Moore, Jr., president of the Moore Dry Dock Company, Oakland, is chairman of a steering committee named by Vice Admiral E. L. Cochrane, president of The Society of Naval Architects and Marine Engineers to arrange for the Society's 1949 Spring Meeting in San Francisco. The dates of Thursday and Friday, May 12 and 13, have been suggested.

On Mr. Moore's committee are included the chairmen of the three Pacific Coast Sections of the Society. The committee is composed of Harold P. Champlain, United Fruit Company, San Francisco, chairman of the Northern California Section; Karl French, San Pedro, chairman of the Southern California Section; William H. Watkins, Bremerton Navy Yard, chairman of the Pacific northwest Section; William B. Warren, American Bureau of Shipping, San Francisco; Thomas Plant, American-Hawaiian Steamship Company, San Francisco; Captain Philip Lemler, Todd Pacific Shipyards Corporation, Alameda; Thomas Ingersoll, Bethlehem Shipyard, San Francisco; Captain Hugh E. Haven, San Francisco Naval Shipyard and Captain Wallace R. Dowd, Mare Island Navy Yard.

The October meeting of the Northern California Section was an all-day session held at the Mare Island Navy Yard October 26, the day before Navy Day and was attended by approximately 200 members and visitors who were taken on a tour of the Yard inspecting the Navy shops and the latest in modern ship repair technique. Visitors included members of the Pacific Northwest and Southern California Sections.

The following four papers were presented: "Cycloidal Propulsion in This Country and Abroad" by Henry Kirschner, Pacific Car and Foundry Company, Seattle; "Notes on German Shipbuilding" by Commander H. A. Arnold of the Mare Island Yard; "Stability Calculations for a 150-ton Floating Derrick," by Ross Laurenson, assistant professor of mechanical engineering, University of California, and "Cavitation and the Propeller of Maximum Efficiency" by William Lambie, Wilmington, California naval architect.

COMMERCIAL SHIP REPAIR TAKE OVER ANOTHER YARD . . . Announcing the purchase and operation of the Martime Engineering Ship Repair plant, San Francisco, are: left to right, top row: J. J. FEATHERSTONE, and E. A. BLACK, Co-Partners; H. A. CAMMANN, General Manager of the new San Francisco Division. Bottom row, left to right: J. R. FEATHERSTONE, Assistant Manager; FRED A. FINN, General Superintendent; MRS. MABEL MONSON, Office Manager and Accountant, all with the San Francisco Division.

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PROVED

IN LONG SERVICE

The combination of NACO ANCHOR CHAIN and JOINING LINKS has built a reputation for dependability and smooth operation for more than 30 years.

Strength of all-cast NACO CHAIN spells added safety for ships. Smoothness, uniformity of size and elimination of special links and shackles means faster and easier movement when paying out and heaving in the anchor.

JOINING LINKS OF EQUAL STRENGTH

E-Z and National Joining Links and Anchor Joining Links are of similar size and shape to the chains with which they are used. They're made of the same steel as the chain and they're proof-tested to the same loads. That adds up to assured safety.

So, for dependability, smooth operation over the wildcat and assured safety, the best answer is NACO CHAIN AND LINKS.

E-Z Anchor Joining Link

National Joining Link

Pacific Coast Representative:
C. J. Hendry Company
27 Main Street
San Francisco 5, California

Est. M&S Co. 1868

NACO ANCHOR CHAIN
TRADE MARK

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

Cleveland, Ohio

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SHAFT ALLEY (continued) Chatter

PACIFIC NORTHWEST SECTION OF SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS STAGE OCTOBER QUARTERLY MEETING AT GEARHART, OREGON . . . Top row, left to right: HARRY DAVIES and C. F. BUTLER, Albina Engine and Machine Works, Portland; P. H. SPAULDING, Todd Shipyards Corp.; H. E. LOVEJOY, Puget Sound Freight Lines; H. C. HANSON, Seattle Naval Architect, Model Testing Basin; J. L. SUTHERLAND, Albina Engine; L. S. BAIER, Naval Architect, Portland.
Bottom row, left to right: A. W. PATERSON, Consolidated Services, Inc., Seattle; P. E. FORSYTHE, Western Gear Works, Seattle; R. H. BARNES, Todd Shipyards, Corp.; L. R. HUSSA, Albina Engine & Machine Works; B. A. McLEAN, American Bureau of Shipping; and from the American Mail Line, G. J. ACKERMAN, Seattle; W. L. WILLIAMS, Portland.

Northwest Naval Architects Hold Quarterly Meeting

Pacific Northwest Section of Society of Naval Architects and Marine Engineers Stage October Quarterly Meeting at Gearhart, Oregon, for second time. A three day program included a golf tournament, a clam chowder buffet supper, a banquet with wives participating; educational motion pictures and papers by H. C. Hanson, Seattle naval architect, and J. M. Dyer, president, Astoria Marine Construction Company.

Dyer's paper traced the development of the Columbia River gill net boat from the days of sail to present day diesel powered vessels. Hanson's paper described the processes involved in converting an LT tug into a Fishery Exploration Research and Hydrographic vessel with emphasis on the detail and special equipment aboard the completed vessel.

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Seattle Propeller Club Elects 1949 Officers

G. J. Ackerman, American Mail Line, has been elected president of the Seattle Propeller Club, Claude E. Wakefield, Bogle, Bogle & Gates, attorneys, vice president, and Alex D. Stewart, The LOG, secretary-treasurer. New governors are Paul A. Pearson, Foss Launch & Tug Company and E. J. Barrington, Pope & Talbot Lines. Holdover governors are H. W. Blaney, Lake Union Drydock Company; H. M. Burke, American-Hawaiian Steamship Company; Winston J. Jones, States Steamship Company and M. M. McKinstry, Alexander & Baldwin, Ltd.

"Lykes Fleet Flashes" Wins Two New Awards

The monthly magazine, "Lykes Fleet Flashes," published by the Lykes Bros. Steamship Co., Inc., of New Orleans, and its editor, Larry Guerin, won three-fold recognition at the Annual Meeting of the Southwestern Association of Industrial Editors in Houston recently.

The magazine won two separate awards. The first, an award of merit, the second, an award for general improvement in appearance, editorial quality and appropriateness to purpose. This makes a total of three awards won by Lykes in the industrial magazine field this year.

Guerin, who is also manager of public relations and advertising for Lykes Lines, was elected SAIE state director for Louisiana. He is vice president of the SAIE chapter in New Orleans.

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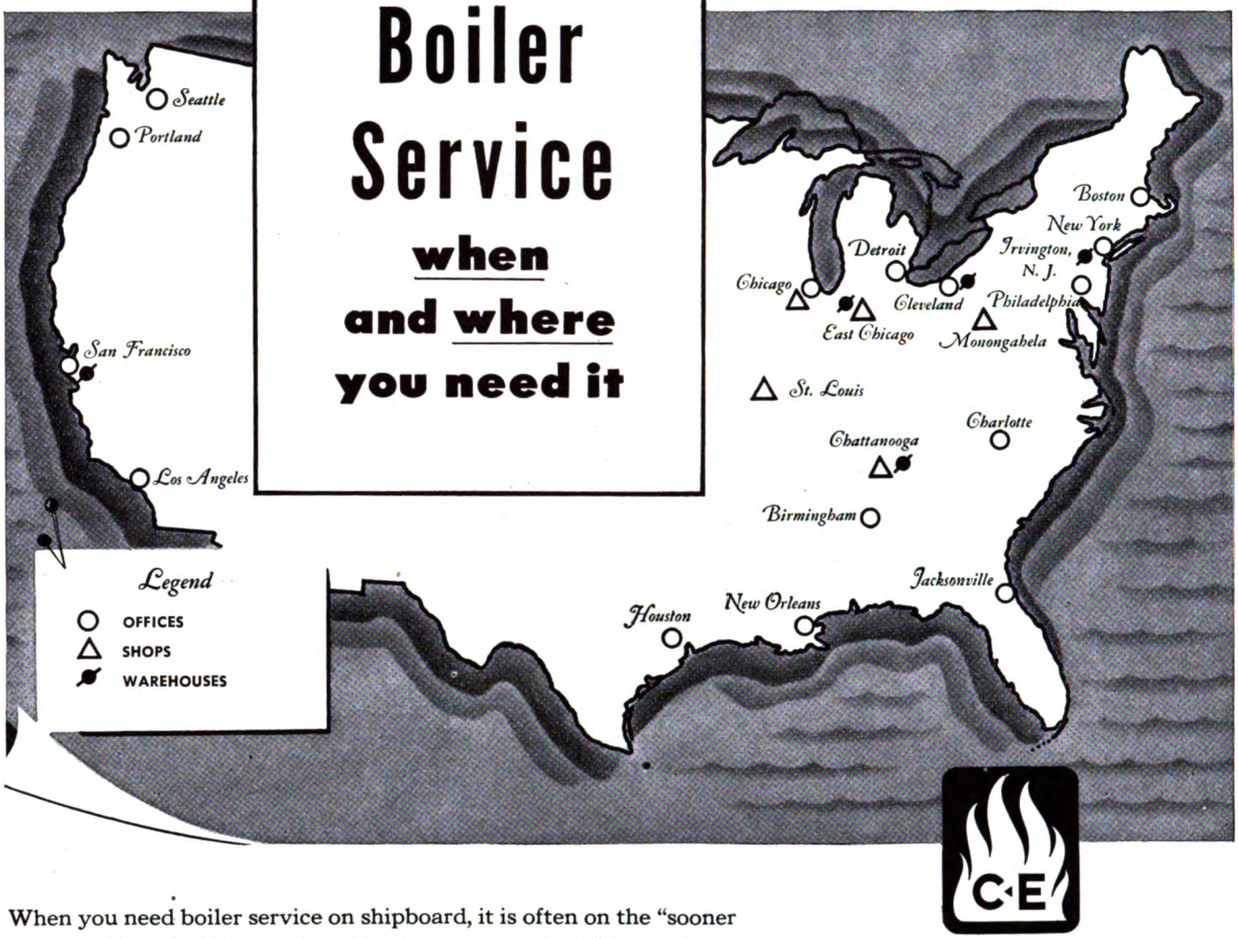
Mattress Sinking Barge Launched at Avondale

The first barge of the mattress sinking plant now under construction for the war department, Corps of Engineers, Memphis district, was launched last month at the river plant of Avondale Marine Ways, Inc., in New Orleans, J. H. Bull, Avondale president disclosed.

The entire plant, which consists of the mattress sinking barge (174 feet by 54 feet), a lower mooring barge (400 feet by 45 feet), and an upper mooring barge (230 by 45 feet), is to be used by the Corps of Engineers in laying mattresses on the Mississippi River banks to prevent erosion and eating away of the levees. The first all electric plant of its type, all work will be completed by February, 1949, Bull said.

BILGE CLUB'S ANNUAL FALL PARTY . . . Left to right: BILL COURTIER, Bethlehem Steel Company, Shipbuilding Division, President of the Bilge Club; BOB SULLIVAN, Western Gear Works; TOMMIE ATKINSON, Wilmington Engineering Service; STEWART SMALL, Cavanaugh Machine Works.
Bottom row, left to right: JOHN F. SHEA, Bethlehem; standing—LOUIE THORPE, J. T. Thorpe, Inc.; GEORGE MILLER, Pacific Tankers, Inc.; JOHN ORLICH, Todd Shipyards; seated—GEORGE McCOY, Marine Solvents; SAM PURSLEY, Pacific Tankers; JACK GILBRIDE and CAPTAIN AL BROWN, Todd Shipyards.

Boiler Service when and where you need it



When you need boiler service on shipboard, it is often on the "sooner the better" basis. But — it's one thing to talk "Service" and quite another to put material aboard ship *when* and *where* it is required.

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Jacksonville	404 Hildebrandt Building	Jacksonville 5-3561
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*San Francisco	Monadnock Building	Yucon 6-2784
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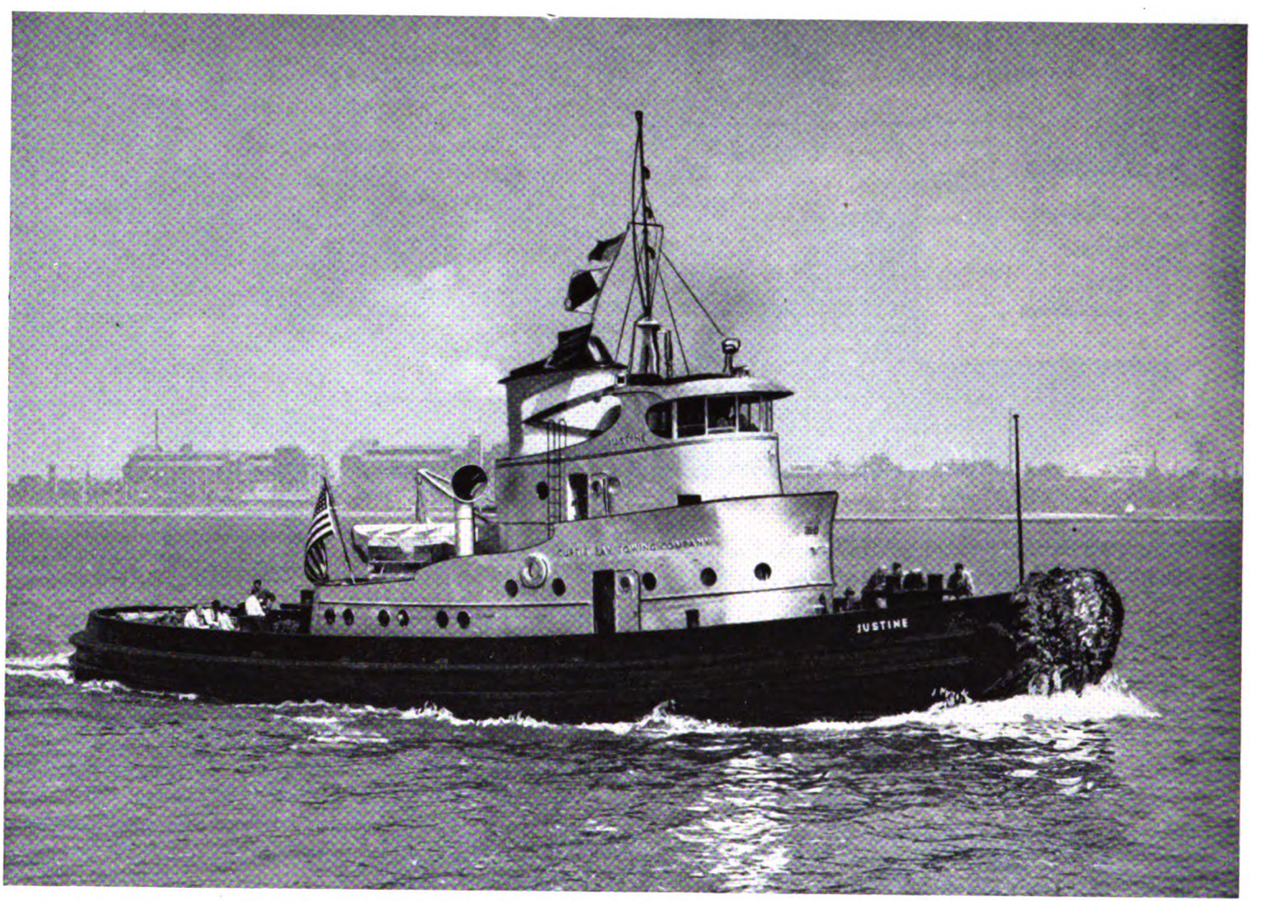

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the LOG
OF AMERICA'S
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Shipbuilding Naval Architecture
Ship and Port Operations
Marine Engineering

MEMBER BUREAU OF ABC AUDIT CIRCULATIONS

DECEMBER, 1948 Vol. 43, No. 13

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Editorial Features

Editorial—Again, "The Cat Has Our Tongue" 25
Twenty-Second Annual Merchant Marine Conference 27
Preventing Corrosion in Marine Services 27
Lubricating Marine Diesels 31
Preserving Our Reserve Fleet Vessels 32
Washington Reporting 36
Operating Ideas
How to Transport Molasses Cargo in Tankers 40
Safety at Sea Conference Effect on Ship Design 42
Planned Maintenance of Electric Motors 45

Departments

Shaft Alley ..... 18 - 22
Societies ..... 38 - 39
Operating Ideas ..... 40 - 46
Ports 48
Equipmentalk ..... 56 - 60

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Again, "The Cat Has Our Tongue"

The old saying, "The cat has his tongue," when a person is speechless, applies all too often to the American Merchant Marine in its relationship to the public. As an industry, we seem unable to take advantage of opportunities to tell the people of America how vital our own ships are to the well-being of the country from both commercial and defense standpoints.

For example, we failed to seize such an opportunity in Philadelphia recently. Some 60,000 people attended the 30th annual National Metals Exposition in Convention Hall. On the stage was a special group of interesting exhibits under the banner, "Salute to Alloy Steel," the theme of this year's show of 350 exhibitors.

There was the Navy with a fascinating cut-away model of a battle cruiser identified as requiring so many tons of steel of which so many were special alloys. Behind the ship model was a large map of the world showing trade routes being plied by freighters. At the top it read, "U.S. Life Lines" and at the bottom were various charts showing the extent to which this country is dependent upon overseas imports of vital metals and commodities. Then came the punch line:

"As industry depends on the Navy to guard its life lines, so the Navy depends on industry for the strength of its weapons."

Not a word about the American Merchant Marine; the ships that bring to our shores the necessary materials we do not possess within our borders. One would gather that the Navy brought these in and commercial shipping did not exist.

We do not criticize the Navy. It has its own story to tell the public. Shipping men cannot expect the Navy to publicize merchant shipping.

We blame ourselves, whose livelihood depends upon shipping and shipbuilding, for missing this opportunity to create support of our merchant marine among the public. We could have told our story at little or no cost at this exposition.

We could have had an exhibit showing the alloy steels used in merchant ships and at the same time projected the idea that the maintenance of a large, modern fleet of commercial ships is of first importance to the welfare of our country.

Every year there are hundreds of such expositions through the country and many offer free space to the Army, Navy and Coast Guard. If the merchant marine asked for it, they could obtain space too.

Nearly all industry expositions would have merchant marine tie-in angles such as raw materials and finished products used in building or operating our ships, imports of raw materials or exports of finished products. Imagine the possibilities with such shows as power, chemicals, oil, hardware, textiles and plastics, to cite a few.

Why don't we speak up when we have the chance to do so at no cost to ourselves? We don't have to look far for the answer. There are a number of agencies in shipping and shipbuilding engaged in publicity, but they go their own ways and consult with each other infrequently. They are doing a good job along narrow lines, but with coordination and allocation of certain responsibilities to each, a far more effective job could be done for the good of the country as well as merchant marine.

Obtaining free space and providing for exhibits at expositions could very well be a project for the Propeller Clubs. They are located in all sections of the country and their members are in a position to know of forthcoming expositions. Whether it is the Propeller Clubs or some other organization, one group should assume the entire responsibility for handling American Merchant Marine publicity through such expositions as the recent one in Philadelphia.

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American Legion Urges a Strong U.S. Merchant Marine

The American Legion at its Thirtieth Annual National Convention at Miami, Florida, passed a strong resolution urging maintenance of an adequate American-flag Merchant Marine. At the same time, the Legion launched an intensive educational drive to acquaint the public with the importance of an American Merchant Marine and of the service's requirements. This educational program included the release of four radio shows to more than 1,000 radio stations and a two-color educational booklet about the Merchant Marine, entitled, "Ships and America."

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Plaque Dedicated At N.O. Seamen's Town House

The Seamen's Town House in New Orleans has hung a plaque in the building's main lobby dedicated to the memory of the seamen who lost their lives during World War II.

Dedication ceremonies opened with a memorial prayer by the Reverend William S. Turner of New Orleans. Guests were welcomed by Harold A. Johnson, executive director of the Town House.

At the meeting of the board of directors Captain J. E. Hart was re-elected president of the board. Julius Goldman, executive director of the Community Chest and Captain Hart described the work of the institution.

Other officers re-elected were William H. Trauth, first vice president; S. V. Massimini, second vice president; Solon B. Turman, third vice president; W. B. Machado, treasurer; Harold S. Meighan, secretary, and Johnson.

New board members chosen are E. A. Jamieson, Monroe Lyons, Morgan Whitney and Harry B. Jordan. Re-elected to the board were Henry M. Allen, Lange W. Allen, Charles I. Denechaud, Richard R. Foster, William J. LeBlanc, Jr., M. C. Malone, John S. Smith, Jr., Julius Szodomka and Mesdames Hugh Dooley, Hamilton Polk Jones, Virginia Shaw Putnam, John M. Kinabrew and Henry H. Vatter.

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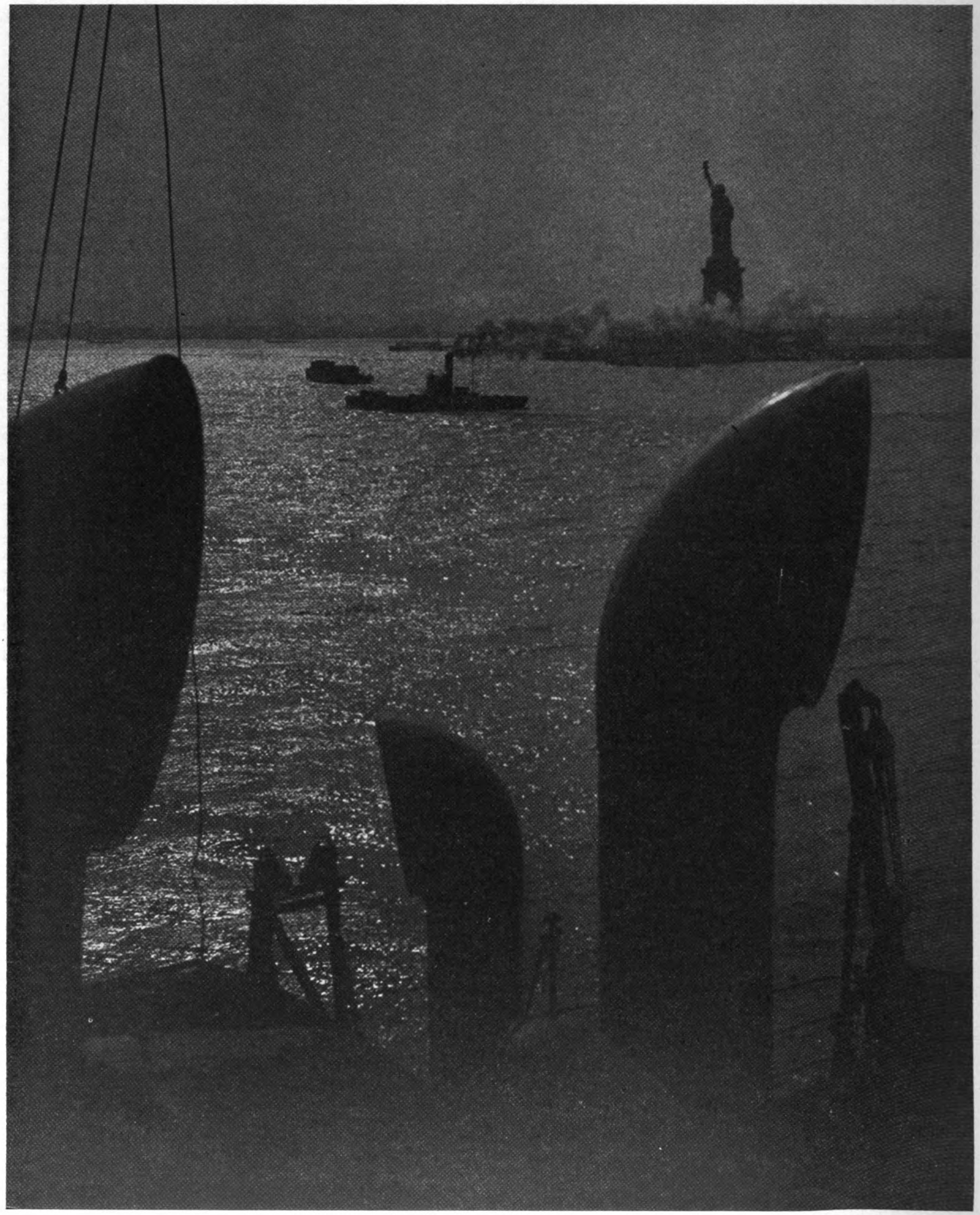

A Palmer Picture

INBOUND . . .

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TWENTY-SECOND ANNUAL MERCHANT MARINE CONFERENCE

LOUIS B. PATE ELECTED NATIONAL PRESIDENT OF THE PROPELLER CLUB

The Twenty-second Annual Convention and American Merchant Marine Conference of the Propeller Club of the United States was held at the Waldorf-Astoria Hotel in New York, October 13, 14, & 15, 1948.

Louis B. Pate, vice president of Seas Shipping Company, was elected national president of the Propeller Club, succeeding Lewis D. Parmelee, president of Agwilines, Inc.

There were twenty-four panel sessions held during the three day conference. These covered such topics of importance to the maritime industry as legislation, maritime safety, port and waterfront development, packaging and packing for export, welfare of seamen, finance, inland waterways, theft and pilferage, national defense, travel agents, labor, shipbuilding, training, marine Diesel engines, public relations, marine engineering, international trade, harbor fire protection, cargo handling, and other related subjects.

Principal speakers at the American Merchant Marine Conference luncheon, held Thursday noon, were: Honorable G. Joseph Minetti, commissioner, department of marine and aviation, City of New York; Vice Admiral W. W. Smith, chairman, U.S. Maritime Commission, who spoke on *Shipping and the National Interest;* H. Gerish Smith, president, Shipbuilders Council of America, speaking on *The Shipbuilding and Ship Repairing Industry—Looking Ahead;* and Frazer A. Bailey, president, National Federation of American Shipping, whose address was entitled, *Our Proper and Rightful Place Upon the Sea.*

Although not a scheduled speaker, Frank P. Foisie, president, Waterfront Employers of the Pacific Coast, addressed the members.

Guest of honor and speaker at the annual banquet, which closes the convention, was Admiral Thomas C. Kinkaid, USN, Commander, Eastern Sea Frontier.

Thirty-two resolutions were passed by the convention meeting. Among the most important of these were:

Resolutions submitted by the panel on Legislation calling for construction differential parity, limited liability of passenger ship operators, reduction to 12 years for classification of an "obsolete" vessel, urging computation of Panama Canal tolls to preclude the cost of national defense features, opposing the re-establishment of Japanese and German Merchant fleets in foreign trade, and reaffirming opposition to the St. Lawrence Seaway project.

The convention adopted a resolution submitted by the panel on Port & Waterfront Development calling for extension of the Reciprocal Trade Agreements Act of 1934 for a period of three years beyond its present expiration date, June 30, 1949.

Stating that: "There is still a widespread misconception on the part of the general public that no more new ships are needed because of the surplus warbuilt ships now on hand," the panel on Shipbuilding and Ship Repairing introduced a resolution, which was adopted by the convention, calling for a long-range ship construction program which would include passenger liners and passenger-cargo vessels, as well as naval vessels.

Two resolutions presented by the panel on Stevedoring placed the Propeller Club on record as "being in full and wholehearted support of the Waterfront Employers Association and the Pacific American Shipowners Association in taking and maintaining the position that they will not negotiate or deal with any labor union whose officials refuse to disavow Communism and sign affidavits of such disavowal as called for by the Taft-Hartley Act." The Stevedoring panel also urged passage of legislation to clarify the overtime-on-overtime payments which are upsetting the industry.

Other resolutions dealt with: ECA cargoes, interest on construction costs, liner services in foreign trade, overseas air transport, inland water transportation, inventories, continuation of port statistics, use of port facilities during times of emergency, foreign trade zones, theft and pilferage, training, and impediments to navigation.

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PREVENTING CORROSION IN MARINE SERVICES

Use of petroleum compounds in the battle against rust.

By M. S. CLARK*
Research Engineer
The Texas Company

Marine equipment has to operate under the worst possible conditions as far as corrosion is concerned. There is water on all sides—air is humid and there is usually a certain amount of spray or fog in the air. And, of course, salt water is much more corrosive than fresh water.

Iron and steel rusts very easily and if left unprotected it would be completely destroyed or made inoperative in a comparatively short time. So it is necessary to wage a continual battle against the forces of corrosion to protect vital and costly marine equipment.

The usual method of protection is to paint the metal with hard drying pigment paints which protect against water and rust if they are applied often enough.

In recent years, as a result of research by the petroleum industry, it has been found that certain types of rustproofing compounds derived from petroleum and containing certain special rust inhibitors are admirably suited for protection of iron and steel especially under the very severe moisture conditions under which marine equipment must operate. In many of these locations these petroleum rust preventives give much better protection than hard drying paints chiefly because:

1. Hard drying paint films crack and allow moisture to get behind them causing rust.
2. Petroleum rustproof coatings remain slightly tacky, and do not harden or crack and they shed moisture like water running off a duck's back. These non-drying coatings are self-healing and they seal out moisture and air which are necessary for rust formation.

Description of Rustproof Compounds

These rustproof compounds are usually marketed in several grades ranging from a heavy one, which must be melted to apply, down to a thin one which can be sprayed. Then there are some that contain pigments to give color to the coatings. For the sake of brevity, I will describe only the most popular one of these products, the one which can be easily applied by brush.

This is a greenish brown product with a consistency similar to a soft cup grease,

**Presented before the American Merchant Marine Conference at the Marine Engineering Panel, conducted by the Society of Marine Port Engineers, New York, N.Y., Inc.*

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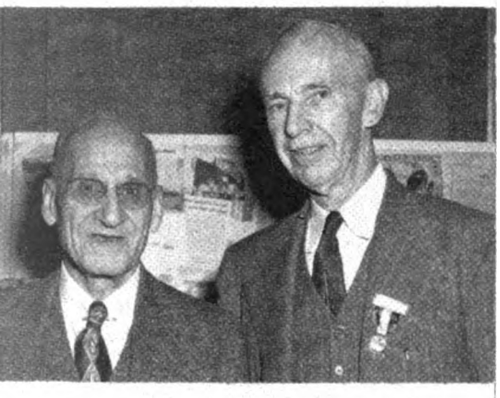
JAMES MERRILL, JR., Vice President, Merrill-Stevens Dry Dock & Repair Co., from Jacksonville, Florida.

FRANK P. FOISIE, President, Waterfront Employers Association of the Pacific Coast, from San Francisco; and FRAZER A. BAILEY, President, National Federation of American Shipping, from Washington, D.C.



Upper left—J. W. de BRUYCKER, Chairman & Secretary, U.S. Atlantic & Gulf-Puerto Rico Conference; and GERALD A. DUNDON, Vice President & General Manager, Pope & Talbot, Inc., of San Francisco.

S. K. ("Pop") SHANE, Manager, Cordage Division, Peden Iron & Steel Works; and C. H. HORSTMANN, Manager, Isthmian Steamship Company, Houston, and member of the National Board of Governors of the Propeller Club, represent Houston, Texas.

Seattle, Washington, is represented by RUSSELL F. HUNT, Drake Puget Sound Company; and PERCY B. CHARLES, Robert O. Fleming & Co.

CHARLES L. WHEELER, Executive Vice President; and G. A. POPE, JR., President, Pope & Talbot, Inc., Steamship Division, both of San Francisco, with MARSHALL DIERSSEN and the Baltimore delegation.

Lower left—HAROLD M. WICK, American Bureau of Shipping; WILLARD F. JONES, General Manager Marine Department, Gulf Oil Corp., and General Chairman Marine Section, National Safety Council, Chairman of the Panel on Maritime Safety; and Captain EDWARD C. HOLDEN, JR., Manager Safety Department, U.S.P. & I. Agency, Co-Chairman of the Panel on Maritime Safety.

Propeller At New York

or mayonnaise. It contains approximately 25% petroleum thinner which makes it easy to apply by brushing. The thinner evaporates leaving a viscous film which does not dry or harden. This film is soft, self-healing, non-hardening, slightly tacky and impervious to water. It will remain on vertical structures without flowing at temperatures up to 140°F. The rust inhibitors contained in these products give added protection over and above the natural rustproofing characteristics of the petroleum compound itself.

Method of Application

This product can be applied readily by brush at temperatures above 65°F. It can also be sprayed, provided it is thinned out to the proper fluidity with white gasoline, kerosene or painters naphtha. However, kerosene will give slower drying characteristics than naphtha or gasoline. Thinning should be kept at a minimum because it reduces the thickness of the protective coating. The amount of thinner required for thinning depends on the spraying equipment and the temperature of application. Past experience has indicated that 10 to 25 per cent of thinner is usually sufficient. *Leaded gasoline should not be used* because of its toxic properties. Thinner should be added in small portions with vigorous stirring and a spray pressure of 30 pounds is adequate.

If the rustproof compound is thinned out with gasoline or other solvents, all the

W. E. BLEWETT, JR., Executive Vice President of the Newport News Shipbuilding & Dry Dock Co. and National Vice President of the Propeller Club for the Middle Atlantic Region.

THOMAS H. BOSSERT, President, New York Shipbuilding Corp., and Co-Chairman of the Panel on Shipbuilding & Repairing.

LEIGH R. SANFORD, Executive Vice President, Shipbuilders Council of America, Chairman of the Panel on SHIPBUILDING AND SHIP REPAIRING INDUSTRY — NEEDS FOR A LONG RANGE PROGRAM.

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New National Propeller Club President LOUIS P. PATE, Vice President of the Seas Shipping Co., takes over the gavel from out-going National President LEWIS D. PARMELEE, President, Agwilines, Inc.

Armiral EDMOND J. MORAN, President, Moran Towing & Transportation Co., presenting a paper on DIESEL ENGINES FOR OCEAN TOWING, at the DEMA panel.

Club Ports Convention

usual fire precautions should be taken. Also if the product is applied in an enclosed space adequate ventilation should be provided for operators, same as when applying ordinary paint.

No definite coverage can be guaranteed since application conditions will vary. Coverage on flat surfaces will vary from 200 to 600 square feet per gallon (approximately 8 pounds) depending on the surface, and thickness of film applied. Thick films give better protection than thin films.

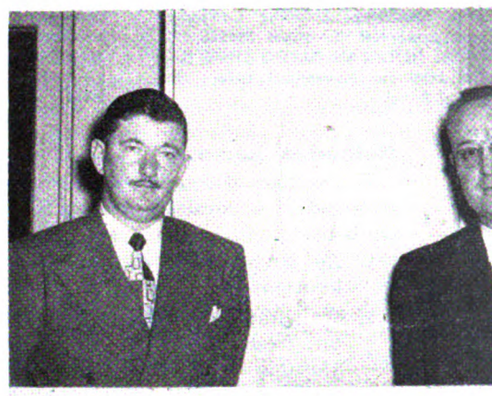
Port of Baltimore Delegation . . . see photo to left. Left to right (seated): J. B. RAFFERTY, Manager, Towboat Division, Baker Whiteley Coal Co.; JOHN McCLAY, Vice President, Maryland Dry Dock Co.; CLIFFORD E. VAETH, representative, Maryland Dry Dock Co.

Standing, first row: H. FRANKLIN SHEELEY, Manager, Moore-McCormack Steamship Co., Baltimore; BENJAMIN F. CULLISON, President of the Propeller Club Port of Baltimore and Asst. Manager, Waterman Steamship Corp.; JOSEPH BRUNE, Manager, Pan Atlantic Line; J. B. DARNIELLE, Vice President, Maryland Trust Co.; and MARSHALL B. DIERSSEN, Port Traffic Representative, Baltimore Association of Commerce.

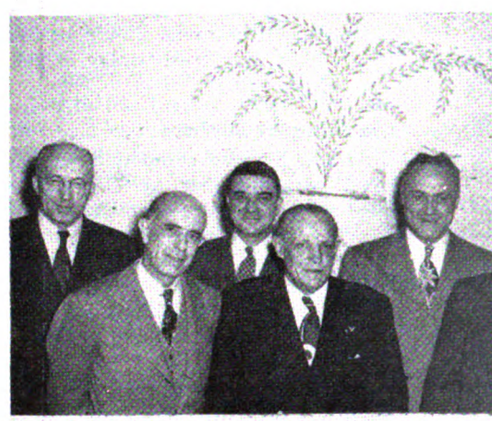
Standing, second row: BENJAMIN R. YATES, New York Representative, Baltimore Association of Commerce; ROBERT E. L. ERNEST, Manager, Metropolitan Hotel Supply Co.; JOHN INGLIS, Foreign Freight Traffic Manager, Western Maryland Railway Co.

Standing, back row: ROBERT FLAGLE, Manager, Atlantic Transport Co.; and J. F. KIPP, Chairman, Propeller Club Luncheon Committee.

Upper right—GORDON LEFEBVRE, President, Diesel Engine Manufacturers Association, and President, The Cooper-Bessemer Corporation; and OTTO H. FISCHER, Vice President, DEMA, and President, The Union Diesel Engine Company; Chairman and Co-Chairman of the Diesel Engine panel.



CAPTAIN J. R. MAXEY, General Manager, Coastal Marine Service of Virginia, Inc., from Norfolk; and M. E. GAINES, Partner, Coastal Marine Service of Texas, from Port Arthur.

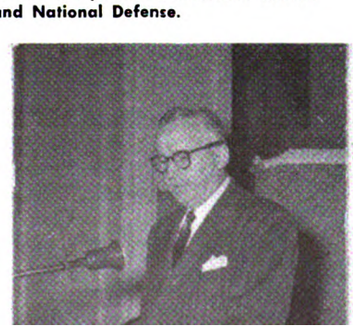


Chairman, Co-Chairman, and speakers of the panel on Marine Engineering: left to right (front), ROBERT W. MORRELL, Consulting Engineer and Naval Architect, who gave a paper on TRENDS IN TANKER CONSTRUCTION (see The LOG for November); Commander B. C. EDWARDS. USNR, President, The Society of Marine Port Engineers, New York, N.Y., Inc., sponsors of the panel, and General Superintendent, Agwilines, Inc., Chairman of the Panel; and F. E. HICKEY, Bureau of Marine Operations, U.S. Maritime Commission, who gave a paper on SHIP PRESERVATION (see elsewhere in this issue of The LOG); (back row) M. S. CLARK, Research Engineer, Technical and Research Division, The Texas Co., who gave a paper on CORROSION PREVENTION IN MARINE SERVICES (see this issue of The LOG); Captain A. C. LANTERI, Chief Engineer, Marine Sales Division, The Texas Co., and Co-Chairman of the Marine Engineering Panel; and G. E. EVANS, Sales Engineer, Standard Oil Co., of New Jersey, who gave a paper, MARINE DIESEL LUBRICATION (see this issue of The LOG).

The Port of Baltimore was well represented as shown in this cut. See listing at left.

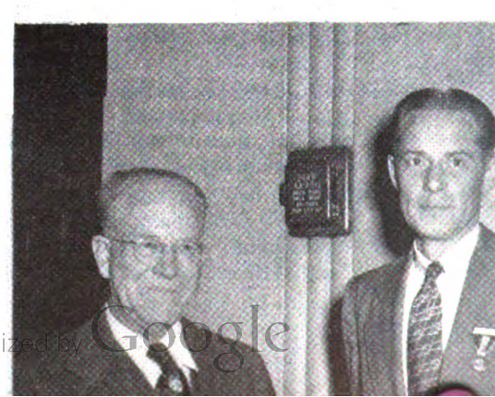
Lower right—From Jacksonville, Florida, JAMES C. MERRILL, SR., President, and GARDNER T. GILLETTE, Vice President, Merrill-Stevens Dry Dock & Repair Co.

JOHN M. GRISER, President, Alabama Dry Dock and Shipbuilding Co., and National Vice President of the Propeller Club for the East Gulf Coast Region, from Mobile.



MILLARD G. GAMBLE, General Manager, Marine Operations, Standard Oil Company of New Jersey, giving a paper on TANKER TRANSPORTATION before the panel on Merchant Marine and National Defense.

HARRY X. KELLY, President, Propeller Club Port of New Orleans and Vice President, Mississippi Shipping Co.



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STANLEY M. LeCOURT, Research Engineer, Mississippi Shipping Company, who presented the paper DIESEL ENGINES IN OCEAN CARGO SHIPS (see The LOG for November) before the Diesel Panel.

CHARLES L. BOYLE, Marine Manager, Sun Oil Co., who presented a paper on DIESELS IN OCEAN-GOING TANKERS (see The LOG for November) before the Diesel Panel.

HARRY PARSONS, Carswell Marine Associates, from San Francisco.

Method of Removal

This rustproof compound can be easily removed, if so desired, by the following methods:

1. By wiping with cloth soaked in kerosene.
2. By spraying with *hot* water (salt or fresh) at normal pressure (around 60 lbs. per sq. in.) and at a temperature of 150°F. or slightly higher which is above the melting point of the coating. (If salt water is used the areas should be finally rinsed with fresh water to get rid of the salt.)

Cleaning of Surface

Although these compounds can be applied with little or no cleaning of the steel surface, it is recommended that very heavy rust and paint scale be hammered loose, scraped or wirebrushed and completely removed from the surfaces to be sprayed or brushed. More effective and economical application can be obtained in this way.

If, however, it is not convenient to remove all the rust before application, the rustproof compound can be applied directly over the rust. The rustproof compound will loosen the rust and make it much easier to remove later by hammering or scraping. The area can then be "spotted up" if the protective layer underneath is not heavy enough.

If necessary these compounds can be applied on surfaces which are slightly damp since they contain inhibitors which give the necessary protection.

Outstanding Advantages

The following items will show the definite advantages which can be expected from the use of this type of rustproof compound.

1. Gives maximum protection at minimum cost—several applications can be made at the cost of one coat of ordinary paint.
2. Does not require skilled labor for application.
3. Requires no excessive cleaning of rusty or painted surfaces although naturally a clean surface will give better results.
4. Will creep into and under cracks of rust and paint, giving good protection against further rusting. (Because of its slow curing.)
5. Will prevent formation of new rust on bright steel surfaces.
6. Adheres well to metal under severe conditions of moisture, providing a film which is more moisture proof than several coats of paint.
7. Contains ingredients scientifically selected for rust prevention, including an inhibitor which prevents rusting even if moisture is present under the film.

   A) Very good results have been obtained in wing and cofferdam bilges and bottom of chain lockers on Texaco tankers. In these locations it is impossible to remove all accumulated water 100%.
8. Does not harden or chip off the surface after exposure to weather.
9. Will not flow from surface after curing even during hot weather.
10. Mixes readily with gasoline, kerosene or painters naphtha by stirring with a paddle, and can be applied easily and smoothly by brush or by spraying equipment.
11. Applications may be made as frequently as necessary directly over the old layer of paint or rustproof compound without cleaning. It is recommended, however, that old loose material be removed.
12. Can be touched up if necessary, several months after original application and retains good appearance.

Disadvantage

The only disadvantage these type products have over hard drying paints is that they cannot be used where personnel will walk on them or otherwise come in contact, or where moving objects might rub against them. The reason is that they do not dry to a hard finish and they are liable to be rubbed off.

These rustproof compounds are especially suited for use in marine service and the following partial list will show some of the locations where they can be used to protect valuable equipment:

ON BOARD SHIP BELOW DECKS
Tank tops and bilges
Refrigerating coils
Hull interiors, bulkheads, overheads, and cofferdams and void spaces (where sweating takes place)
Water, ballast, and cargo deep tanks
Exposed finished or bright work of stored machinery and spare parts, such as bearings, main shafting, steam pumps, main engines, piston rods, valve stems, connecting rods, etc. (Rustproof to be removed with solvent before assembly.)
Anchor chain locker and anchor plates
Battery cables
Steel Surfaces to be covered with wood or composition
Inside water bucket
Well recesses
Stern tube recesses and packing glands
Engine and boiler room foundations
Boiler saddles and angles
Boiler undersides
Flooring under boilers
Under-floor-plate pipe and frames

(Top) STERLING F. STOUDENMIRE, JR., Washington Attorney for Waterman Steamship Corp.; J. W. O. VON HERBULIS, Vice President, Waterman, New York; and BON GEASLIN, General Counsel for Waterman, Mobile, Alabama.

(Bottom) Propeller Club Port of Los Angeles-Long Beach was represented by: (left to right), RALPH CHANDLER, Vice President, Matson Navigation Co.; LEE K. VERMILLE, Admiralty Attorney; HAROLD BLACK, President, Propeller Club Port of Los Angeles-Long Beach; HOWARD WOODRUFF, Secretary-Treasurer, Propeller Club Port of Los Angeles-Long Beach; and CHARLES S. BOOTH, Attorney.

Condenser pipes
Coal bunkers and ash equipment
Underside Engine Room Floor Plates
Inaccessible steel construction work, as around sea valves, main and auxiliary engine seatings and foundations

ON BOARD SHIP TOPSIDE
Winches and winch rods (when not in use)
Exposed machinery and equipment
Cables
Anchors, anchor chains, anchor windlass
Davits
Nuts, bolt studs and dogs on winches, water tight doors, etc.

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Standing rigging
Boom rest pins
Exposed worm gears
Turnbuckles
Interior of ventilating ducts for both inlet and exhaust vents
Eye bolts, rope thimbols, rope rings
Storage tanks, and saddles
Top of drums stored on deck
Mast stays
Masthead blocks (Not suitable for decks, floors, etc.)

IN THE SHIPYARD

Interior and exterior of metal drydocks (except on flooring where walking may take place)
Cranes
Machinery and equipment stored in yard awaiting installation on vessels
Pipe lines
Structural steel
Steel surfaces to be covered with wood or composition
Metal wharf and dock piling
Exposed yard machinery
Hulls of idle ships

GENERAL

Dredges and dredging equipment
Tugs, Towboats, barges and car floats

These petroleum type Rustproof Compounds have proven themselves in many industries such as iron and steel, railroad, automotive, farming, chemical, road building, packing, petroleum, coal and coke, paper, refrigeration. In all these industries corrosion is a very serious problem. They have also proven excellent in Marine service in locations where they have been tried. Their use should however be extended further in the Marine Industry since they are especially suitable for this work and millions could be saved annually in preventing corrosion.

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LUBRICATING MARINE DIESELS

"God maketh the earth to rotate endlessly without oil or bearings, but *not* thy Diesel."

By G. E. EVANS*
Sales Engineer
Esso Standard Oil Company

This discussion was not prepared with the idea of going too deeply into the technical aspects of lubricating a diesel engine. Instead, we will merely set up some questions on what an oil is supposed to do in an engine to keep it running smoothly, and then we will try to analyze what is lacking when unsatisfactory conditions develop and what might be done to correct them.

Suppose we start in the crankpit and work up. The finely machined, highly polished surfaces of the crankshaft represent a big investment, and repairs due to any failure in service are very costly. A thin film of oil a few thousandths of an inch thickness prevents the metal to metal contact between main and crankpin bearings and the steel journals of the shaft. Failure of the lubricating oil film would cause overheating, the bearing would be ruined, and damage might be done to the crankshaft. Temperatures are generally low at this location in marine engines and maintaining a lubricating oil film is not a very difficult job. Most of the bearings are of white metal and corrosion of the bearing metal is no particular problem, since the temperatures are well down below the point where bearing corrosion takes place. The bearings would fail for other reasons before the temperatures would be high enough to cause any corroding action.

Medium-Speed Engines

The medium-speed, medium-size diesel engines may have alloy bearings, such as the copper lead type, and these are subject to corrosion by inferior lubricants, especially under high temperature conditions.

The cross-head and guide must be protected by a separating film of lubricating oil to prevent overheating and scoring or "pick-up" of the metals which are generally cast iron.

The oscillating motion between the crosshead pin or piston pin and its bearing or bushing is accompanied by heavy shock loading from the thrust of the power stroke and the oil film has a big job to do at this location.

The most important and most difficult of all lubricating functions of a diesel engine oil is found in the ring zone. The job of the lubricating oil at this point is to provide a film that reduces friction and also acts as a sealing medium between the rings and the liner wall. The very high temperature of the combustion blast, somewhere around 3,500°F, will have its effect throughout the adjacent parts of the engine and although the cylinders, water jacket and piston may be oil cooled the lubricating oil is unavoidably subject to high temperatures. It is rather difficult to get temperatures of moving piston parts, but metal temperatures in the vicinity of the top ring have been taken and found to run 350 to 400°F on some engines. The oil must resist breakdown under these high temperature conditions in order to prevent the formation of hard carbon that may stick on the rings or build up in the ring grooves so that the rings are no longer free to move. When they no longer seal themselves against the liner wall blow-by will begin, and when it starts it has a "snowballing" action due to the further rise of the temperature as the hot gases flow through the clearance space between the piston and the cylinder bore. The oil that remains on the bore during the power stroke is burned and the carbon will find its way out with the exhaust gases. There should be no excessive deposition in the exhaust ports or trunk. There is always some light varnish on piston skirts. If the layer is too thick, however, it may start to peel off and pile up in the ring grooves.

Oil Cooling Pistons

The use of oil cooling of the pistons will keep the metal temperatures down and this, along with the use of high quality lubricating oil, will keep the piston deposits at a minimum. The oil cooling feature requires that the lubricating oil have good oxidation stability so that it will not deposit heavy carbon on the underside of the piston crown to reduce the effective heat transfer.

The oil service duty on a large marine engine is not nearly as severe as it is in some other fields of diesel engine operation such as railroad locomotives where crankcase oil temperatures of 250°F are not uncommon. Since there is always plenty of water to keep a marine diesel cool, the lubricating oil temperatures will never be carried at such high levels as they are on diesel powered mobile land equipment where cooling sometimes is a real problem.

The bottom head of a double acting engine presents an additional lubricating job that may be quite difficult. As long as the piston rod is smooth and the metallic rings in the packing gland seat well

*Presented at the Marine Engineering Panel at the American Merchant Marine Conference, conducted by the Society of Marine Port Engineers, New York, N.Y., Inc.

FRANK T. REIL, Director of Information, American Merchant Marine Institute, and Chairman of the Panel on Public Relations.

LARRY GUERIN, Director of Public Relations, Lykes Bros. Steamship Co., New Orleans, who gave a talk on A PUBLIC RELATIONS PROGRAM FOR A FREIGHT LINE.

JAMES F. ROCHE, Director of Public Relations, Moore-McCormack Lines, Inc., and Co-Chairman of the Panel on Public Relations.

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and are free to move the problem of lubricating is an easy one. However, if the packing rings become sluggish or tight a small wisp of blow-by may start to come down along the piston rod. This will result in higher temperatures which will lead to coking of the oil and more ring sticking and accelerated rate of blow-by. If not corrected, a piston rod may become scored or scratched so that seating is practically impossible even if the rings are free.

Now that we have gone over the engine in a general way, let us examine some situations where troubles are showing up and see if we can find out what the causes are.

Connecting Rod Bearing Failures

Main and connecting rod bearing failures are generally caused by some mechanical condition such as misalignment or mis-fit and also by overload conditions that may cause the bearings to run hot. There may be a high spot caused by an imbedded particle of foreign substance on the bearing that will cause localized overheating which will cause a piece to drop out. This will reduce the effective bearing area and lead to more overheating. It is possible for an oil to break down and deposit sludge throughout the system so that some of the oil feed lines may be partially clogged and as a result a bearing may be starved for oil. This might probably be classed as a failure due to inferior lubricating oil, but these cases are rather rare. Abrasive material such as rust or scale picked up by the lubricating oil may lodge in a bearing and cause it to fail and at the same time to do some damage to the crankshaft. As long as clean oil is delivered to the bearing in sufficient quantity it will maintain the necessary protective film, assuming mechanical and operating conditions are in order. However, for example if a bearing shell is turned in its pedestal or support in some way so that the oil flow is cut off, trouble is on the way for as stated in the Seventh Commandment of the "Ten Commandments for Diesel Maintenance" as written up by a clever Chief Machinist's Mate "God maketh the earth to rotate endlessly without oil or bearings, but *not* thy diesel."

Diluted Lube Oil

Sometimes when a bearing fails a comment is made that "the oil has broken down, thinned out, and lost its body." This statement is completely inaccurate because when oils break down they get thicker, not thinner. The only way an oil in a diesel engine can "lose its body" is for it to become diluted with diesel fuel. This assumes normal temperatures, as all oils, of course, will "thin out" or reduce in viscosity in varying amounts as the temperature is raised.

When a sample of diesel lube oil is examined and found to be too thin or below its normal viscosity, it is time to look for the cause which lies in the engine itself. Leaky fuel oil lines may account for diesel fuel getting into the crankcase and dribbling injectors may be responsible for unburned fuel getting by the piston rings.

Below normal oil pressures generally show up when a batch of crankcase oil has become diluted since there is absolutely nothing that a lubricating oil can do to resist the "thinning" action of the lower viscosity fuel oil when it mixes with the lubricating oil.

Aside from fuel dilution, the other

(Continued on Page 53)

DIESEL ENGINE PANEL . . . (left to right): Commodore LISLE F. SMALL, Executive Engineer, Lima-Hamilton Corp.; CHARLES L. BOYLE, Marine Manager, Sun Oil Company; Captain GEORGE F. HICKS, USCG, Chief, Naval Engineering Division, U.S. Coast Guard; ROBERT MORSE, Vice President, Fairbanks, Morse & Co.; STANLEY M. LeCOURT, Research Engineer, Mississippi Shipping Co.

ROBERT FRIEND, President, Nordberg Manufacturing Co.; Captain WILHELM EITREM, New York Representative, Fred. Olsen Line Agency, Ltd.; GORDON LEFEBVRE (in back) President, Diesel Engine Manufacturers Association and President, Cooper-Bessemer Corp.; Admiral EDMOND J. MORAN, USNR, President, Moran Towing & Transportation Co.; HARRY B. JORDAN, President, Canal Barge Co., Inc.

GEORGE CODRINGTON, Vice President, Cleveland Diesel Engine Division, General Motors Corp.; EDWARD SCHWANHAUSSER, Vice President, Worthington Pump & Machinery Corp.; A. J. DAWSON, Chief Engineer, Marine Department, Dravo Corp; OTTO FISCHER, Vice President, DEMA, and President, The Union Diesel Co.; and BRIAN P. EMERSON, Editor, "DIESEL POWER AND DIESEL TRANSPORTATION."

PRESERVING OUR RESERVE FLEET VESSELS

Improved preservation methods from experimentation.

By F. E. HICKEY, Chief*
Bureau of Marine Operations
U.S. Maritime Commission

By mandate of Congress the United States Maritime Commission is retaining in reserve status large fleets of commercial and military auxiliary-type vessels for use in the event of a national emergency. The manner in which such vessels are preserved and the developments in the management of the fleets are, no doubt, of interest to persons active in marine matters. A year ago I presented an article which outlined the basic problems in conducting a reserve fleet program, the preservation compounds, the methods employed, and information developed by actual tests regarding the time and the costs to remove preservation compounds when a vessel is restored to operation.

The past year has demonstrated that the plan, the compounds and the methods are basically sound and yield adequate preservation at minimum cost. It has also demonstrated that minor adjustments only are needed for unusual conditions found on some vessels, that a continuation of our policy to experiment with new ideas and to adapt old ones will result in the accomplishment of more with less, and that experiments with and the testing of old and new products must continue. With these thoughts in mind, the following summary of the past year's principal accomplishments, developments and tests is presented for general infor-

**Presented before the American Merchant Marine Conference at the Marine Engineering Panel, conducted by the Society of Marine Port Engineers, New York, N.Y., Inc.*

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mation and to illustrate that the program is being carried on with a vigilance as to effectiveness and economy at reserve fleet sites.

Ship Movements

The Congress found it necessary to amend the Merchant Ship Sales Act of 1946 several times because of world conditions. These changes have caused a staggering load of ship movements at the fleet sites and, along with the uncertainties of need for various type vessels, also have caused some delay in the complete preservation of vessels. From V-J day to September 15, 1948 a total of 3,507 vessels have entered reserve fleets. 1,730 of these vessels have been withdrawn for operation, reconversion or sale. This has necessitated approximately an additional 1,940 intra-fleet vessel movements in order to maintain compact, securely moored units of vessels in the several fleets.

A grand total of 9,120 vessel moorings and unmoorings have been accomplished during this period, each of equal or greater hazard than the docking or undocking of a "live" operating vessel. One of the largest fleets had 1,323 such movements in one year. Vessels have been received or delivered on many occasions at the total rate of twenty per day at the eight fleets in existence. Only a few very minor accidents have occurred in accomplishing this enormous movement of vessels. This entire operation has been conducted with fleet personnel, tugs and service craft, in many instances under adverse weather conditions and with limited facilities. It is believed that no equal ocean vessel movement of "dead" ships in confined waters has ever before occurred within a like period of time and that we may be justly proud of our record in handling these vessels.

Reserve Fleet Sites

Fleet sites are maintained in nine principal maritime areas, strategically located. The following tabulation lists the reserve fleet sites in operation and the number of vessels, totalling 1,777, moored in each on September 15, 1948:

Hudson River, New York	112 vessels
Baltimore, Maryland	1 vessel
James River, Virginia	446 vessels
Wilmington, N. C.	425 vessels
Mobile, Alabama	181 vessels
Beaumont, Texas	109 vessels
Suisun Bay, Calif.	311 vessels
Astoria, Oregon	136 vessels
Olympia, Washington	56 vessels

Each fleet site mooring plan received special attention in order to accommodate the practicable maximum number of vessels. Special mooring devices were planned, designed, tested and installed at several sites to ensure security during heavy weather and hurricane seasons. At other sites secure mooring is accomplished through use of standard vessel ground tackle. The facilities and special mooring devices are now being installed or about completed at all permanent sites except Astoria, Oregon, which has only lately been designated by the Maritime Commission as a permanent site for reserve vessels. On completion of all permanent site facilities, mooring space and mooring arrangements in which to maintain approximately 2,500 permanent reserve vessels in full security under all known weather conditions will have been created.

Preservation—Not Improvement

The basic purpose for which the reserve fleets were established is to hold vessels not needed in operation at convenient locations, securely moored and adequately preserved so as to prevent serious deterioration, at minimum cost consistent with sound results, until disposal in accordance with existing laws or for use in case of future national emergency. It is not intended, and never was, that vessels would be overhauled or repaired at fleet sites by fleet personnel and fleet activities are restricted to custodial and preservation measures.

There is no method of preservation that can improve the initial basic condition of the object to be preserved, but in order to properly apply preservative compounds in a manner to achieve the maximum good it is necessary to properly prepare the surface to be treated. The methods and manner of preservation in effect at our reserve fleets include proper preparation and treatment to the extent that vessel hulls, machinery and equipment which suffered slight to serious corrosion, accumulation of salt deposits and scum coatings during war service. These surfaces and equipment are now receiving such attention prior to application of final preservation coatings with the net result that vessels are actually in much better condition over-all after a period of time in reserve fleets than prior to such lay-up.

With reference to the foregoing, in view of the tremendous area that must be treated within a reasonable time, it has been found advisable to accelerate by manual and mechanical means the removal of scale, salt deposits and scum accumulated during vessel operation from the hull exterior surfaces and vessel equipment prior to preparation for final preservation compound coatings over the rate of removal that could be accomplished by application of a penetrative type compound only. Concurrently with manual and power-tool descaling operations, one fleet conceived and partially developed the idea of utilizing fire pumps and deck stand monitors to descale vessel sides and decks by high-pressure water blasting.

Results to date are highly encouraging, indicate immediate large savings in man-hours and overall costs and produce a surface ideally conditioned for application of primary preservation treatment. Where water blast descaling is not complete to the extent that final preservation treatment may be applied at once, it greatly speeds our entire preservation program.

Water Blasting Hulls

Experience to date has shown that water blasting will remove an average eighty per cent of the scale accumulation from the hulls of all vessels in the fleets and that descaling to that extent is accomplished with approximately thirty per cent of the man-hours that would be expended if the same descaling was done manually and with usual power tools. With due allowance for manpower and for operating maintenance and replacement costs for equipment used in water blasting, there is a net dollars savings, closely estimated, of eighty per cent as against descaling manually and with usual power tools. The use of water blast descaling has now been extended to all fleets. It is believed that additional use and experimentation will result in improved performance and still greater savings.

Water blasting is accomplished by use of approximately 200 g.p.m. at 250 p.s.i.g., using straight bore nozzle throats to obtain a compact discharge stream for maximum impact when operating with the nozzle approximately 12 feet from the surface being blasted. It may be argued that water blasting is a very inefficient use of power. Allow me to remind you that I can think of no operation more inefficient over-all than manual or power-tool descaling of vessel hulls and decks and that net results relative to

(Continued on Page 51)

MERCHANT MARINE AND NATIONAL DEFENSE is the Panel being addressed by Commodore ROBERT C. LEE, Executive Vice President, Moore-McCormack Lines, as he presents a paper on THE LINER IN NATIONAL DEFENSE. Seated, left to right, are: Brigadier General PAUL F. YOUNT, USA, Assistant Chief of Transportation, U.S. Army Transportation Corps; MILLARD G. GAMBLE, General Manager, Marine Operations, Standard Oil Company of New Jersey; and Rear Admiral AUGUSTUS J. WELLINGS, USN, Assistant Chief of Naval Operations (Transportation) Department of the Navy, Chairman of the Panel on Merchant Marine and National Defense.

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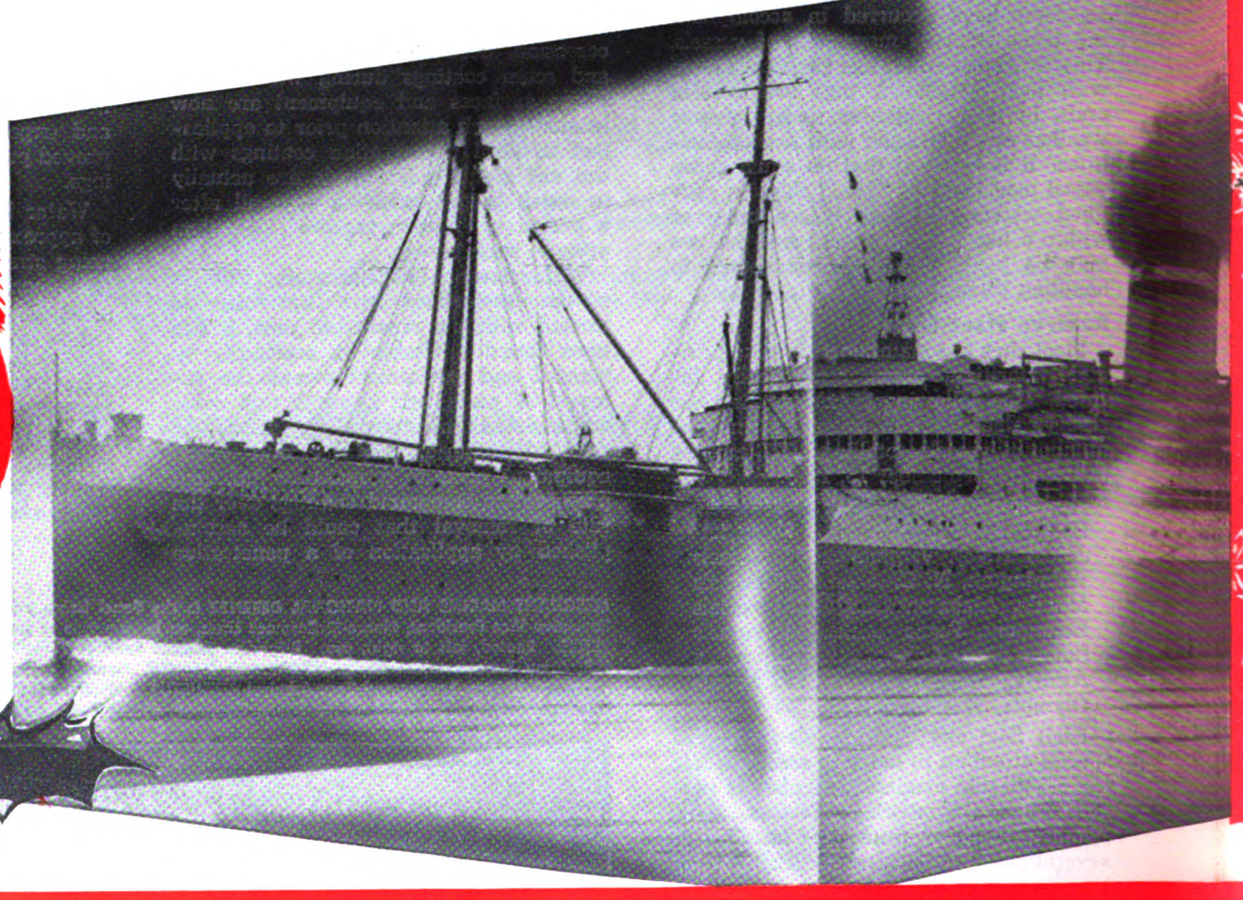
MERRY CHRISTMAS

To all our friends, who through their loyalty and good will have contributed so greatly to the growth of our organization, we extend a shipload of personal wishes for a joyous Christmas and a happy, prosperous New Year.

The Entire Organization of

COMMERCIAL SHIP REPAIR



COMMERCIAL

4 Yards

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Winslow—Winslow, Washington—Port Blakely 500

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Reporting

By The LOG's Own Correspondents

Democratic Congress Will Affect Shipping Legislation

The unprecedented political upset at the polls in November which solidly established the Democrats in control of both Houses will have profound effects upon proposed shipping legislation. However, the welcome shift in control of the House Merchant Marine & Fisheries Committee from the cavalier hands of Alvin Weichel to the experienced and capable control of Judge Schuyler Otis Bland can be considered nothing but a change for the better.

Probably the most serious change in the complexion of legislation pending introduction will be in the labor category. The overtime on overtime issue, which has already been stamped okay by the Supreme Court, will face tough sledding if the Congress considers its Democratic sweep a labor mandate. It will also give the CIO a much stronger hand in the dictation of shipping legislation designed to get our ship replacement and passenger liner program underway.

A very large question mark hovers over the other major legislative items affecting shipping which are due to be introduced into the Eighty-first Congress. The most important of these, aside from the long range shipping program, are repeal of the transportation tax, lowering of Panama Canal tolls, easing of travel restrictions and the controversial St. Lawrence Seaway. The fate of these issues in the new Congress will probably not be to the liking of the shipping industry.

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Foreign Discrimination In Shipping Rapidly Increasing

The latest irritation in U.S. shipping relations with other countries comes from Australia. While the Australians have long charged import duties on all fuels and stores consumed while non-national vessels are in Australian territorial waters, they have now added to that a sales tax. While the amount of the tax is not large, it does provide another discriminatory injustice against U.S. and other non-Australian shipping.

It is generally believed around Washington that the Maritime Commission will soon begin investigations into the discriminatory practices of various foreign countries, exerting their authority under the 1916 Shipping Act.

One of the discriminatory practices to be investigated will be the Argentine income tax. Negotiations are going on at the present time between the State Department and the Argentine Government for the execution of reciprocal tax exemption agreements. If these negotiations are not successfully completed before the new Congress convenes, it is considered likely action will be forthcoming on various bills dealing with discriminatory practices.

JUDGE SCHUYLER OTIS BLAND . . . a welcome return.

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New Long Range Program Being Readied For Congress

The fiasco which marked the fate of our long range shipping program in the Eightieth Congress will not be repeated in the Eighty-first if industry, labor and the Government can help it. A new legislative program, embracing most of the major points of the legislation considered in the last Congress, will be ready soon after the new Congress convenes. However, all three parties concerned are going to sit down and try to work out their differences *before* they go up to the Hill.

Probably the new legislation will include these major provisions:

1. Construction differential for offshore trades.
2. Limited liability for passenger ships.
3. More equitable interest charges under the Ship Sales Act and the 1936 Merchant Marine Act.
4. Liberalization of the trade-in provisions for both foreign and domestic shipping.
5. Accelerated depreciation.
6. Adjustment of depreciation on reconstructed vessels.

Provisions of the legislation introduced last year which will likely be suspended from the new proposals are:

1. Construction differential for domestic services.
2. Section 511 tax funds.
3. Inspection and other excess requirements.
4. National defense features.
5. U.S. Government defaults on subsidy contracts.
6. Manning scales and wages on subsidized vessels.
7. Discriminatory coastwise rates.

The construction differential for domestic shipping will be dropped primarily because of the powerful opposition promised by the railroads. The power of the railroads on the Hill is well known and it would be suicide for the shipping lines to test it in connection with its long range shipping program. The general feeling in Washington is that it would be too great a risk to include this provision in the regular program—defeating the aim of preparing legislation satisfactory to all major elements prior to introduction.

The section 511 tax funds are being dropped primarily because of the CIO opposition. The previous provision for inspection and other excess requirements is no longer necessary since the Maritime Commission has now included these in the construction differential, and the national defense features (excess speed, elimination of paying cargo space, etc.) are now considered clarified. Manning scales and wages on subsidized vessels will be turned over to the CIO for handling since it is primarily their concern, and the discriminatory rate problem will be fought out before the ICC.

However, the most significant single item to be dropped from the new proposed legislation will be the industry demand for a flat fifty percent construction differential. This was the most controversial provision of last year's program and the one which aroused the violent opposition of the CIO Maritime Committee. Rather than request a flat fifty percent differential, the industry will push for an amendment to the 1936 Act which will specifically provide for apparent deficiencies in establishing true parity for construction differentials. From usually accurate Washington sources it appears that the language of the new legislation will clearly authorize the Maritime Commission to take into account the various factors in determining *true* parity, which the industry generally feels has not previously been the case.

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Underground Movement To Scuttle 50% Proviso ECA Act

There is a definite underground movement in the State Department, instigated, aided and abetted by foreign purchasing commissions of maritime nations, to scuttle the provisions of the Economic Cooperation Act requiring fifty-percent of ECA cargoes to be shipped in American bottoms. Agitation is strong among the free-spending boys in the lower echelons of State and tangible results can be looked for when Congress convenes.

Where that will land our American Merchant Marine is not hard to foretell when figures recently released by the National Federation of American Shipping are examined.

The Federation pointed out that in June, 1948, U.S. flag vessels carried less

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than 40% of the dry cargo exports compared with an average participation of 51% for the year 1947. The analysis showed the following trends:

U. S. Flag Participation in Foreign Waterborne Transportation

	Of Total U.S. Waterborne Trade	Of Exports of Waterborne Dry-Cargo
January, 1948	56.0%	53.5
February	57.0%	52.2
March	56.0%	49.9
April	52.8%	47.7
May	47.7%	40.4
June	47.4%	39.5

The Federation pointed out that in June 1948, trade with certain of the principal maritime nations—the United Kingdom and Scandinavian countries—U. S. flag participation was less than 30% and has been low for some time. The Federation attributed the low over-all American percentage in large measure to the carrying of the ships of these nations.

In a brief statement, the Federation said:

"Foreign competition, cheap foreign labor and discriminatory practices of foreign governments are clearly frustrating the achievement of our reasonable goal of carrying half of our foreign trade. We are rapidly trending toward the prewar status of carrying less than 30% of our foreign commerce. Vigorous support of our merchant marine, realization of its vital essentiality for national defense, and recognition both at home and abroad of our rightful place on the seas will be necessary to reverse this alarming trend."

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New Rules Proposed For Radar Operator Licenses

New rules for radar operator licenses which have far reaching implications to the industry have been proposed by the FCC.

The new rules contain the following revisions or additions to the proposed rules which were released by the FCC on April 5, 1948:

1. The new proposed rules would revise the maintenance section by:

   (a) requiring a *ship radar operator endorsement* on existing radio operator licenses for all radar maintenance other than fuse and receiving tube replacements.

   (b) authorizing personnel without such licenses to make replacements of fuses and receiving-type tubes.

2. The new proposed rules would require the keeping of a radar installation and maintenance record; and list the items which must be entered in such log.

It is the intention of the NFAS to hold meetings of its Telecommunications Committees to discuss these new proposed rules, and to consult with other interested segments of industry for the purpose of obtaining as wide and uniform approach as possible to the proposals.

New Congressional Committees For Merchant Marine Affairs

The election results bring back to control of the House Merchant Marine and Fisheries Committee Representative Schuyler Otis Bland, a welcome change in command for most shipping men.

Other Democrats who were re-elected and are expected to serve with Representative Bland on the Committee include Edward J. Hart (N.J.); Herbert Bonner, (N.C.); Cecil R. King (Cal.); Prince H. Preston, Jr. (Ga.); Donald L. O'Toole (N.Y.); Clark W. Thompson (Tex.); and Frank Boykin (Ala.). James Domengeaux (La.); Emory H. Price (Fla.) and Hugh A. Meade (Md.), all Democrats, did not stand for re-election and were replaced by other Democratic Congressmen. On the Republican side of the House Merchant Marine Committee, those returning include Alvin F. Weichel (Ohio), present Chairman of the Committee; T. Millet Hand (N.J.); Henry J. Latham (N.Y.); T. C. Tollefson (Wash.); John J. Allen, Jr. (Calif.); Edward T. Miller (Md.), and Charles E. Potter (Mich.). Clyde Doyle (Dem-Cal.) won over Willis W. Bradley (Rep-Cal) in a close race. Among the Republicans not returning are David M. Potts (N.Y.); Raymond H. Burke (Ohio); Horace Seely-Brown (Conn.); John C. Brophy (Wis.); Robert Nodar, Jr. (N.Y.); and Mitchell Jenkins (Pa.). Of interest to the shipping industry, because of his many friends in it, it is the election of James J. Murphy, (Dem.-N.Y.), who was elected in the 16th New York District which includes Staten Island and lower West side Manhattan.

In the Senate, the Interstate and Foreign Commerce Committee will have as its head Edwin C. Johnson, Dem. of Colorado, who was re-elected. Democrats who will serve on this committee will be Tom Stewart (Tenn.); Ernest W. McFarland (Ariz.); Warren G. Magnuson (Wash.); Francis J. Myers (Pa.); and Brien McMahon (Conn.). Wallace H. White, Jr., the present chairman of this Committee, has retired from the Senate and the other Republicans who will continue to serve this Committee are Charles W. Tobey (N.H.); Clyde M. Reed (Kan.); Owen Brewster (Me.); and Homer E. Capehart (Ind). Albert W. Hawkes, of N.J., did not stand for re-election, Edward H. Moore, of Okla., also did not run. When the new Congress assembles in January, it is possible that several of the committee assignments will be changed in the reorganization.

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Status Of Internat'l Meetings Affecting Shipping Industry

With so many international titles and initials being bandied around in Washington these days it is practically impossible to keep track of those which affect the steamship industry. However, there are several of prime importance now being conducted or to be held in the near future with which the industry is primarily concerned.

IMMCO was sent to the Senate by the President with his recommendation for ratification and now awaits approval or disapproval of that body.

The ILO conference in Geneva was scheduled to get under way November 25, 1948. It is expected that the primary purpose of labor in this convention will be to push action on the Seattle Convention, still awaiting ratification by the various governments.

Right after the first of the year there is to be an International Telecommunications Conference in South America. It is not yet certain whether or not this will involve maritime telecommunications, but there will very likely be discussions of radio telephone allocations.

December 6 to 15, 1948, there will be a meeting of the Committee on Facilitation of Inter-American Travel in Buenos Aires. International steamship lines, bus lines, air lines and railroads will take an active part in the discussions, designed to reduce inter-American travel restrictions to the status of a tourist card such as now used in travel between U.S. and Mexico and Cuba. U.S. Steamship lines are being represented by Bruce MacNamee of the National Federation of American Shipping.

The Inter-American Economic Conference is scheduled for March in Buenos Aires and its purpose is to consider implementation of matters coming out of the Ninth International Conference of American States, held last year at Bogota. The shipping industry is opposed to many of the items on the agenda of this conference.

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USMC Projects Charter Fleet Of 283 By June, 1949

According to the Maritime Commission, the estimated status of vessels chartered by the USMC for June 30, 1949, indicates an expected total of 283 bareboat chartered ships and a grand total of 1042 vessels including 747 privately-owned ships, as compared with a total of 1260 as of September 15.

The estimated schedule is compiled on the basis of monthly requirements prepared by the Department of the Army and the ECA. It is estimated by the Maritime Commission that an average of about 198 chartered vessels will be required monthly from September 1948 through February 1949 to meet ECA needs. Eliminating duplications contained in ECA estimates, and U.S. privately-owned tonnage, it is believed by the agency that the Army will need an average of eighty-two chartered ships monthly. In view of the current downward trend of U.S. bulk cargo shipments, it is believed by the USMC that the 100 U.S. privately-owned Liberty type vessels will be adequate to meet additional bulk movements. The following table prepared by the USMC indicates the actual number of ships on charter as of Sept. 15 and the number of ships "it may expect to charter out" on Feb. 28 and June 30, 1949, provided Con-

(Continued on Page 53)

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THE SOCIETY OF PORT ENGINEERS

Official Organ: The LOG

Refractory Process Described To Puget Sound Port Engineers

Using the film "A Trip Through The A. P. Green Fire Brick Plant" for illustrative purposes William Kay, and David Pollard, of E. J. Bartells Company, Seattle described refractory production processes and analyzed varying qualities of brick depending upon the specific uses to be made of them, before the Society Of Port Engineers of Puget Sound in October.

Bricks, it was explained, are in three groups; acid, neutral and basic. Methods of manufacture include varying processes including dry press, hand made, air hammer, stiff mud, slip casting, and fusion casting. Each group and each process is the brick maker's answer to particular qualities required to meet specific problems noted among the destructive forces in furnaces among which are listed high heat, spalling, slag, abrasion, loading, gases, flame infringement, and protection against faulty construction. A longer than usual question and answer period offered evidence of great interest in the subject.

In recognition of the retirement of Captain W. D. Hill from the Coast Guard Marine Inspection Service many members honored and feted the Captain with tributes. Announcement was made of appointment of nominating committee and Christmas welfare committee.

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LA Port Engineers Hear Steam Turbine Discussion

A comprehensive discussion of "Steam Turbines in the Marine Industry" was given by Frank H. Drew of San Francisco, Pacific Coast steam superintendent for the Westinghouse Electric Corporation, during the November meeting of the Society of Port Engineers. During his talk, Mr. Drew traced the history of steam turbine ship propulsion from its inception in the TURBINIA in 1897, to the present, discussed steam conditions deemed economical for present-day turbine-driven ships and considered briefly the possible application of gas turbines to ship propulsion.

"For the small freighters and tankers," he reported in part, "it was said during the early part of the postwar period that it was doubtful if any changes could be justified in the steam conditions as specified by the Maritime Commission for its ships built during the war. It was also cautiously stated that steam conditions of around 600 PSIG and 850 degrees F. T.T., could probably be justified for ships that have a quick turn-around such as tankers, and those on long voyages which spend a good percentage of their time at sea. These limitations are still essentially true. For ratings of less than approximately 8,000 S.H.P., it is felt that, economically, steam conditions above 450 PSIG and 850 degrees F.T.T. at this time appear questionable. For higher powers the steam conditions of around 600 PSIG and 850 F.T.T. appear to be economically sound.

"Tankers are now under construction having turbines designed for 585 PSIG, 790 degrees F.T.T. and 28.5" vacuum. Steam rates of approximately 6.5#/SHP/HR are being guaranteed. Our company has designed a Merchant Marine unit rated at 12,500 SHP for steam at 835 PSIG, 840 degrees F.T.T. and 28.5 vacuum. This unit will have a steam rate of only slightly more than 6.0#/SHP/HR. The gear 'K' factor will be 70 and propeller RPM 112. The high pressure turbine will operate at 7,500 RPM and the low pressure at 4,800 RPM. The WT/SHP will be approximately 27.

"The 20,000 SHP tankers under consideration are to be designed for 105 RPM propeller speed. The steam conditions are 836 PSIG, 890 degrees F.T.T., and 28.5 vacuum. We are guaranteeing a straight condensing steam rate of something less than 6.0#/SHP/HR. The high pressure unit will operate at about 6,000 RPM and the low pressure at 4,300 RPM. The WT/SHP will be close to 25."

The speaker touched briefly on the possibility of applying the gas turbine to marine propulsion, and described a 2,000-HP gas turbine Westinghouse has built for experimental purposes.

"Assuming that the gas turbine can be developed to operate reliably and with a competitive fuel cost, its adoption for propulsion plants will be determined largely by its first cost and operating cost," he said. "It appears to be a safe conclusion that the gas turbine power unit will be developed first with the air and land transportation industries, and the marine industry can well afford to watch these developments through the early stages before sending gas turbine-equipped ships to sea."

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GE and Texaco Share Honors At Portland Port Engineers

The Society of Port Engineers, Columbia River Area, have set the second Wednesday evening of each month as their regular meeting date. Meeting on October 14 in a joint session with Theta Xi fraternity the program features included an educational talk by Howard Perry of General Electric Company supplemented by a motion picture on the subject of "Power By Which We Live," and a film, courtesy The Texas Company, illustrative of development of oil wells. Minutes of the meeting record the program as among the best since the Society was organized.

Harvey G. Martell, chairman of the program committee, announced that programs were tentatively booked through June, 1949. President James E. Saviski announced David Shaw, Shaw Brothers and Associates; and Don Bartosch, Combustion Engineering Company as members of the Christmas Party committee, planned as a social event with wives of members and others present as guests.

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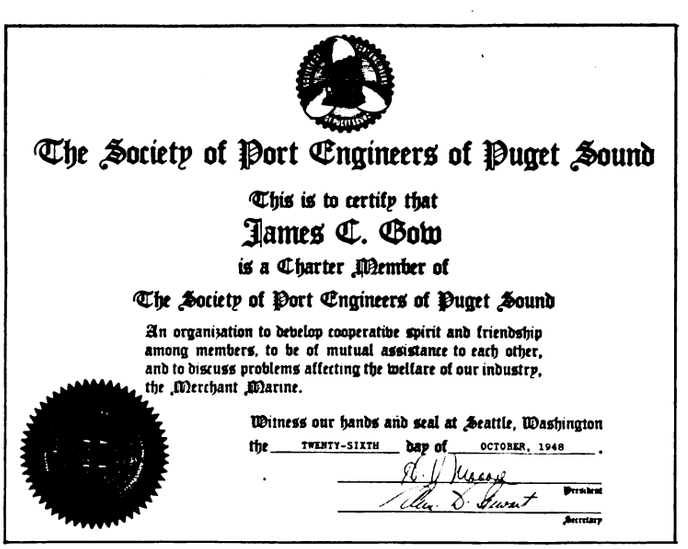
San Francisco Port Engineers Schedule 1949 Programs

John S. Leslie, president of the Leslie Company, Lyndhurst, N. J. spoke on "Automatic Temperature and Pressure Controls in Marine Power Plants" before the November meeting of The Society of Port Engineers, San Francisco.

Mr. Leslie's talk was illustrated by slides and he was assisted by John Cordes, Ralph Murray and Lowell Jett of Cordes Brothers, San Francisco, marine representatives of the Leslie Company.

Marshall T. J. Garlinger, United States Army Transport Corps, chairman of the San Francisco Society's educational committee, announced speakers and subjects



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President

Secretary

SOCIETY of Port Engineers of Puget Sound issue membership certificates.

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for this month and practically all of 1949.

For this December's meeting Combustion Engineering Company, through its San Francisco representatives, the Robert L. Johnson Company, will present films showing the progress and development of boilers from 1882 to the present time. The Johnson company hopes to show an ultra-slow motion technicolor film showing the actual combustion operation in a boiler in operation under load conditions and another portraying the actual steam generation in a boiler.

"This steam generation picture will change all the ideas we have had relative to what goes on in a boiler under load conditions," Mr. Garlinger says. "The picture was made by the Dearborn Chemical Company."

At the January meeting, officers of the United States Navy will tell of the advantages gained by marine engineers by belonging to the United States Naval Reserve. P. H. Thearle, U.S.A.T.C., president of the Society, arranged this program.

Walter B. Hill, C. C. Moore & Company, Engineers, Pacific Coast representatives of Babcock & Wilcox, boiler manufacturers, will talk at the February meeting on the "Use, Application and Maintenance of the Copes Automatic Feed Valve."

The Micarta Division of the Westinghouse Electric Corporation will present the March program and discuss properly engineered and designed applications of Micarta to marine and other work, such as stern tube bearings, rudder pintles, centrifugal pump bearings, stern pump liquid end packing rings, packing for rods and the many applications of Micarta in the insulation of electrical machinery.

Future programs, including April and beyond, will be selected from this list:

A talk by engineers of the San Francisco X-Ray Magnetic Laboratory on the nondestructive test of marine machinery parts by means of X-rays, Gamma rays, supersonic waves, magniflux and the black night magniflux invention.

The Gisholt Machine Company will present a program on dynamic balancing, illustrating, among other points, the dynamic balancing of the rotating elements of jet airplane units, the most precisely balanced units in any machine.

Hot plastic and bottom paints will be discussed by Captain A. S. Pitre, United States Navy.

Late developments in construction and operation of alternating current deck machinery will be discussed by M. J. Gigy of M. J. Gigy Associates, San Francisco, representatives of the Lake Shore Engineering Company, Iron Mountain, Michigan, manufacturers of the new "Magi-Winch."

President Thearle and his colleagues, Carl Wall and George Harlan of the Army Transport Corps will sponsor a talk on the subject: "What the Chief Engineer Should Know about the Stability of the Vessel."

Jim Crough of the Hyet & Struck Engineering Company will present a paper

(Continued on Page 46)

The Societies of Port Engineers

LOS ANGELES: Left to right, W. L. BUDGE, Los Angeles Steam Supervisor for Westinghouse; F. W. DREW, Pacific Coast Steam Superintendent for Westinghouse and speaker of the evening; JOE WOSSER, Retiring President of the Society, Port Engineer for Matson Lines who is being transferred to Honolulu; PAUL M. SHIPLEY, Port Engineer and SAUL SCANLON, Steam Field Supervisor, both from Westinghouse, Los Angeles.

THE SOCIETY OF PORT ENGINEERS . . . SEATTLE, top row, left to right: WILLIAM T. KAY and DAVID POLLARD, both with E. J. Bartells Co., representatives of A. P. Green Fire Brick Company; New Members—LEONARD A. PEELER, U.S. Maritime Commission; RICHARD C. BLACK, General Electric Co.; PHILIP M. LUCAS, Army Transport Corps.

SAN FRANCISCO, second row, left to right: HUBERT KEMPEL, Chief Naval Architect of the U.S. Army Transport Corps, in S.F. from Washington, D.C.; C. V. ALBIN, U.S.T.C.; CHRIS M. LARSEN, Dee Engineering Co.; H. L. LIVINGSTON, new chief Engineer of Moore Dry Dock Co, Oakland. Mr. Livingston, who has been with Bethlehem recently succeeded J. M. Matthews, retired, at Moore's. DOUGLAS E. DICKIE, Foster Wheeler Corporation.

"COAST GUARD NIGHT" featured the October 20th meeting of The Society of Marine Port Engineers New York, N.Y. Inc., with Admiral ED. H. "ICEBERG" SMITH as principal speaker.
Bottom row, left to right: Lieutenant Commander ROBERT S. SMITH, Assistant to the Marine Inspection Officer; B. C. EDWARDS, President of the Society; Admiral SMITH, Commandant, Third Coast Guard District, New York; and, Captain WILLIAM M. McGUIRE, Marine Inspection Officer, Third Coast Guard District, New York.
Informal talks were given by the three Coast Guard officers on the work of the Marine Inspection Service.

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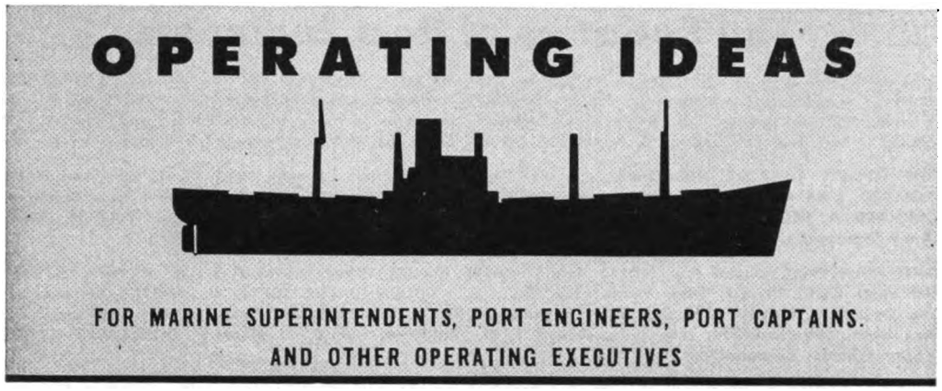

HOW TO TRANSPORT MOLASSES CARGO IN TANKERS

By Frank J. Morrison
General Superintendent
Pacific Tankers, Inc.

Pacific Tankers Inc., as general agents for the U.S. Maritime Commission, transported several cargoes of Hawaiian molasses to Pacific Coast ports on liberty-type tankers and in so doing gained considerable experience in handling this type of cargo. As we also operated T-2 tankers it was natural for us to conduct a study to determine the practicability of transporting and successfully discharging molasses on this type of vessel equipped with the following cargo pumps:

3 electric driven centrifugal pumps
2 electric driven rotary stripping pumps
2 steam pumps, one vertical reciprocating stripping pump in the after pumproom and the other a steam bunker transfer pump in the forward pumproom.

As cargo temperature could not exceed 115° F. without danger of caramelizing and as at this temperature the viscosity Saybolt furol averages 614 seconds it was our conclusion the centrifugal pumps could not be used under any circumstances, but that the electric rotary and steam pumps could be used with certain reservations.

Location of Heating Coils

Another factor of some concern was the location of the heating coils which are approximately 7″ above the bottom of the tank at their lowest point. Due to the limitation on heating it would be impossible to keep the cargo between the heating coils and ship bottom sufficiently fluid for discharge except when sea water and air temperatures were favorably high. We believed this difficulty, if encountered, could be overcome by the use of a flexible steam hose 1″ in diameter connected to the deck steam line and lowered to the bottom of the tank in the vicinity of the suction. Subsequent discharge operations carried out under ideal conditions did not warrant the use of this hose.

When in April, 1947, the U. S. Maritime Commission requested our suggestions regarding the possibility of transporting molasses on T-2 tankers the above information was passed on to them with our opinion the operation could be successfully carried out. On this basis the ss PLATT PARK and ss LOST HILLS were nominated to lift full cargoes of approximately 15,600 tons each at Hawaiian Island ports for discharge at New Orleans and San Pedro respectively.

Due to the weight of the cargo preloading calculations determined the cargo would only be carried in the following tanks:

2 center, 3 wings, 4 center, 5 wings, 6 center, 7 wings, 8 center and 9 wings.

With bunkers, stores and water the above loading was within the allowable stress conditions for safety and allowed the vessel to sail on a draft of 29′04″ forward, 31′04″ aft with a mean of 30′-4″.

Temperatures Maintained

Enroute to discharge port cargo temperatures were maintained at approximately 80° F. and in order to insure the cargo was not overheated it was necessary for the Master to secure and note temperatures of each tank every four hours. When within four days run of the discharge port, cargo heat was raised gradually up to, but not exceeding, 105° F. It was only after arrival in port and with the full consent of the charterer that cargo temperatures were raised to 115° F. to expedite discharge and during this time constant examination of the cargo was made to insure caramelization would not occur after cargo cooled.

To insure the best possible supervision in discharging these first cargoes and also to gather pertinent data a port captain was dispatched to attend one of the vessels and a loading superintendent dispatched to attend the other. Under their direction various discharge methods were tried to determine which would deliver the cargo at the highest rate.

Methods of Discharging

One method attempted was the connecting of a jumper hose between the main 12″ cargo line and fuel transfer suction line in No. 1 tank to make use of the bunker transfer pump forward. It was our conclusion, however, that this arrangement was not warranted on the basis of the result obtained since as the vessel changes trim by the stern as cargo is discharged, the discharge rate from the forward pump is gradually decreased to where it becomes only a fraction of the rated capacity of the pump. In determining the possibility of using the main centrifugal pumps, they were placed on the line for a short period of time and it definitely established this type of cargo will not flow to the pump at a sufficient rate to keep the pump from overspeeding. In the final analysis better results were obtained by discharging the entire cargo through the after pumproom using the electric rotary and steam stripping pumps only.

In order to assure a constant flow of cargo to the pumproom, it was found desirable to channel all cargo through the center twelve inch suction line, discharging the forward tanks through the crossover in No. 5 tank and tanks, 7, 8 and 9 through the crossover in No. 7 tank. Unless this procedure is followed, we found that one pump had a tendency to rob the others through unequal supply. Further equalization of distribution to the pumps was secured by adjusting the suction valves at the pumps to insure the proper flow to allow the pumps to operate smoothly.

When discharge pressures in excess of 60 pounds were attempted, excessive vibrations set in on the pumps and no increased rate of discharge could be noted. Therefore, it is recommended that prior to starting the rotary stripping pumps the steam stripping pump be used alone for thirty minutes to clear the line of any possible cold slugs that might have remained after loading. The steam stripping pump, of course, is in all cases tied into the twelve inch main suction line and not into the regular stripping line which is obviously far too small to handle molasses.

During various periods of the discharging the rate fluctuated between 100 tons per hour and 250 tons per hour, averaging in the case of the ss PLATT PARK 199.3 and the ss LOST HILLS 164.2. Stripping the molasses cargoes was handled in much the same manner as stripping viscous petroleum products in that after a tank is discharged to within a

Correction

The article "Stability After Flooding" which appeared under Operating Ideas in the October issue of The LOG, contained a typesetting error. On page 48, third column, fourth paragraph, the first sentence should read, "Although the ship remained upright, her rolling was slow and sluggish, indicating that the GM was quite low." The phrase " . . . even after the equalizing and filling of the deep tanks had been carried out . . ." should have been deleted.

Editor.

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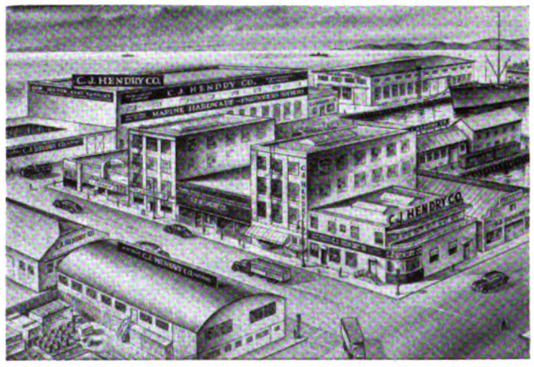

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few feet of the bottom it is necessary to concentrate on discharging the remaining rapidly to preclude the possibility of solidification.

Stripping Tanks

Stripping of each tank was accomplished by using all three pumps and watching very closely to see the suction was never completely lost on the rotary pumps by feeding them slightly from other tanks. This is an operation which, of course, requires a rather complete knowledge of the weaknesses of the type of pumps in use and considerable experience in order to avoid damaging any of the ship's equipment. However, it turned out to be eminently successful because on each vessel there remained only an estimated twenty tons of molasses after the completion of discharge. It was found that discharging with any one of the three pumps was so slow as to allow the molasses to cool and was impractical.

Following is a recapitulation of pertinent points connected with the discharge of this cargo:

PLATT PARK—New Orleans	
Av. Air Temp.	—70.6
Av. Sea Temp.	—61.4
Cargo Temp.	—115°F.
Specific Gr. Cargo @ 68°F.	—1.4418
Visc. Saybolt Furol @ 120°F.	=914 sec.
Av. Rate Disch, per hr.	—876.9 bbl. or 199.3 short tons
Amt. Cargo remaining on board after completion of discharge	—20 tons

LOST HILLS—San Pedro	
Av. Air Temp.	—70
Av. Sea Temp.	—61.9
Cargo Temp.	—115°F.
Specific Grav. Cargo @ 60°F.	—1,4562
Specific Grav. Cargo @ 77°F.	—1,4382
Visc. Saybolt Furol at 120°F	=614 sec.
Av. rate Disch. per hr.	—656.8 bbl. or 164.2 short tons
Amt. Cargo remaining on board after completion of discharge	—20 tons

Conclusions

In summarization it is our opinion that the use of a standard T-2 type of tanker for the transportation of molasses should be avoided as a general commercial practice. However, we do believe that given favorable conditions and strict supervision by an experienced tanker officer, the possibility of delivering a molasses cargo without incurring excessive charges are better than even if the following pertinent points are brought to the attention of the charterer.

In the first place, pumping equipment is not designed for handling this type of cargo. While the cargoes discussed above were handled without undue incident, the breakdown of any one of the three pumps during discharge would probably have involved extensive expense to the charterer in used laytime. In any event it is most important that the two rotary pumps as well as the steam stripping pump be thoroughly inspected by ship's personnel prior to loading and that if any worn or defective parts are found, they should be replaced before molasses is run through the pump.

If possible, it would also be highly desirable to secure permission to increase the temperature of the cargo to 120 to 125° F. although our experience shows that molasses shippers are extremely reluctant about authorizing such high temperatures due to the danger of caramelization of the cargo.

We also believe that if the sea temperature at the discharge port is lower than 50° F. there will probably be considerable loss of cargo due to excessive cooling of the last drainings in the tanks.

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SAFETY AT SEA CONFERENCE EFFECT ON SHIP DESIGN

PART II

By EDWARD V. LEWIS
Naval Architect
George G. Sharp

Part I of this article ran in the November, 1948 issue of The LOG.

Fire Protection

Perhaps the most important technical accomplishment of the 1948 Conference was the adoption of complete rules regarding methods of fire protection which should minimize the fire hazard by confining any fire to its point of origin. Although in the 1929 Convention there were a number of miscellaneous regulations on means of fire detection and extinction which have now been elaborated upon in Part E of Chapter 2, "Fire Detection and Extinction in Passenger Ships and Cargo Ships," a completely new section appears as Part D, "Fire Protection in Accommodation and Service Spaces." This new part, which is applicable to passenger ships only, represents a compromise solution to the fire protection problem, since there was a wide divergence of opinion as to the most satisfactory method. These opinions were conditioned by the present practice and availability of materials in the various countries. The resulting regulations are set up to permit three alternative methods, embodying American, British and French practice, respectively.

However, there are certain requirements of the new Part D which are common to all methods. In all cases the main structure, including decks and deckhouses, is to be of steel. The ship is to be divided into main vertical zones by class "A" bulkheads which are in general not more than 131 feet apart, as in the old Convention. Accommodations are to be separated from machinery, cargo, stores and service spaces by Class "A" bulkheads. Steel stairways are to be located so as to provide means of escape from each main fire zone to open deck and are to be enclosed by "A" bulkheads. (A class "A" bulkhead is defined as a steel bulkhead suitably stiffened and, where there are combustible materials in adjacent spaces, insulated on the basis of a standard fire test. All openings in such bulkheads are to be provided with means of closing which are at least as fire resistant as the bulkheads themselves.)

Method I

The first alternative, Method I, is illustrated diagrammatically in the accompanying figure for a typical American cargo-passenger ship. Under this method, all internal divisional bulkheads other than the Class "A" bulkheads mentioned above, are to be constructed of incombustible class "B" panels, such as asbestos board or insulated hollow metal panels, generally without a sprinkler system and with a detection system only in spaces inaccessible to the fire patrol. Bulkheading is to be so constructed as to insure the integrity of the assembly if attacked by fire. (On ships carrying less than 100 passengers, the "B" panels need not be incombustible provided they comply with the applicable fire test.) This method is in general agreement with the U. S. Coast Guard regulations, though much less detail is given in the Convention, leaving a correspondingly greater latitude for interpretation.

Method II

Under Method II there is generally no restriction on the type of internal divisional bulkheading, but an automatic sprinkler and fire alarm system is to be provided for the detection and extinction of fire in all spaces in which a fire might be expected to originate.

Steel enclosures are required for main stairways, but sprinklers may be used to protect auxiliary stairways.

Method III

Under Method III a system of subdivision is to be used within each main vertical zone, "using 'A' and 'B' class divisions distributed according to the importance, size and nature of the various compartments, with an automatic fire detection system in all spaces in which a fire might be expected to originate." The use of combustible and highly inflammable materials and furnishings is restricted, but a sprinkler system is generally not required. Any subdivision enclosed by "B" class bulkheading is in general not to exceed 1300 square feet, with a maximum of 1600 square feet. All corridors and public spaces are to be

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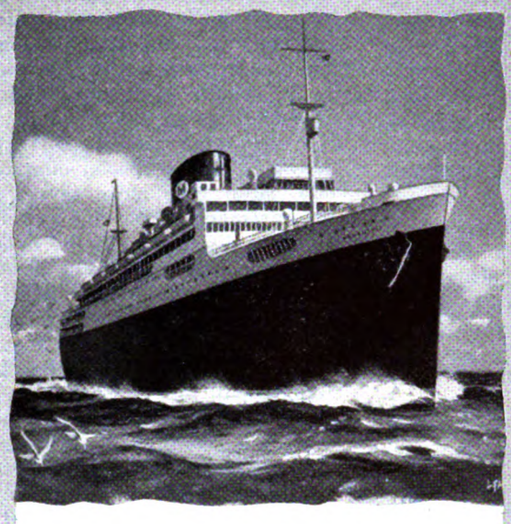

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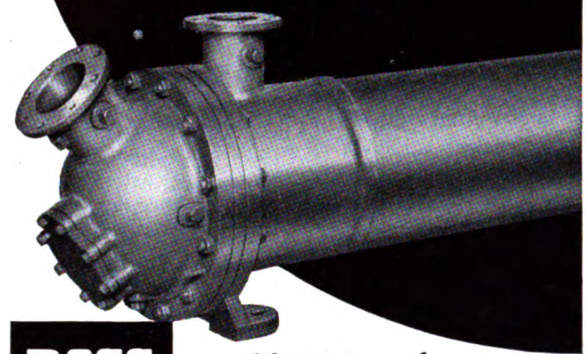

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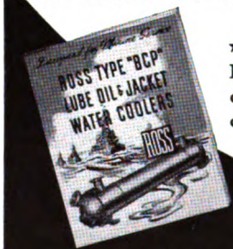

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bounded by "B" bulkheads.

An interesting feature of the new regulations is that much less emphasis is placed on deck covering types and thicknesses than in the present U.S. Coast Guard rules, it being provided merely that "primary deck coverings within accommodation spaces, control stations, stairways and corridors shall be of material which will not readily ignite and as approved by the Administration." Presumably this may lead to approval in this country of lighter deck coverings in reduced thicknesses, provided, of course, that where a deck is an "A" division insulation may be required under it.

Considerable foresight is shown by the provision for possible substitution of "aluminum with appropriate insulation" for steel.

A separate category is provided in the regulations for ships carrying over 12 but not more than 36 passengers. More limited requirements applicable to such vessels include main fire screen bulkheads and an automatic fire detection system covering all enclosed spaces used by passengers and crew, "except spaces which afford no substantial fire risk."

Fire Detection and Extinction

In Part E detail requirements are given for fire detection and extinguishing equipment. The only important addition to the passenger ship requirements is a provision that manual fire alarms are to be installed in accommodations. The requirements of this part are generally similar to the present U.S. Coast Guard rules.

Cargo vessels of over 1000 gross tons are now for the first time included, the following equipment being required, generally in agreement with U.S. Coast Guard requirements:

Two power pumps and the necessary fire mains and hoses to permit at least two powerful jets of water to be directed into any part of the ship,

Portable fire extinguishers in accommodation and machinery spaces,

Emergency outfit (breathing apparatus, safety lamp, axe, portable drill),

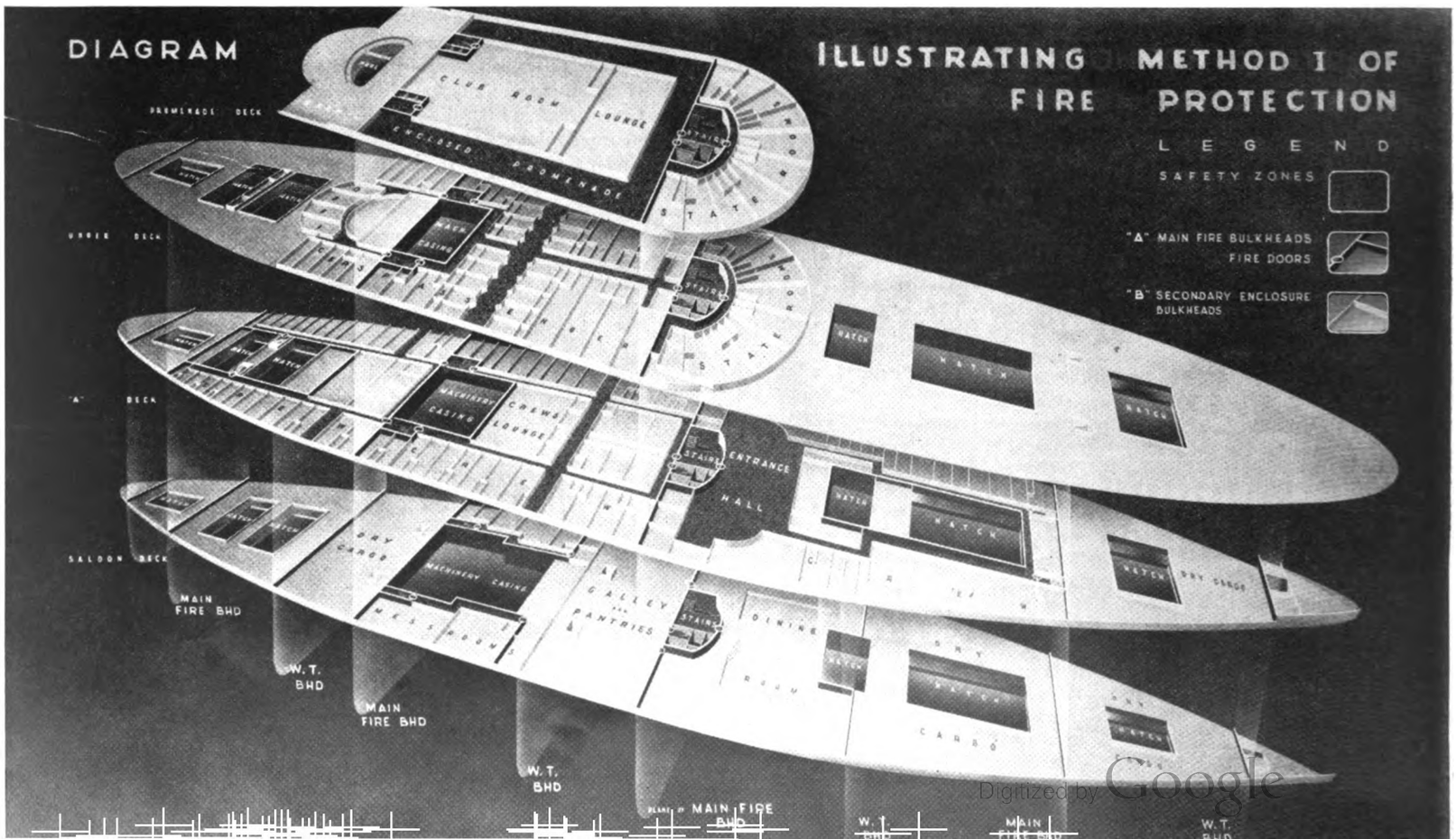
In machinery spaces of ships using oil for fuel, nozzles for spraying water on oil; and in ships having oil fired boilers, a built-in foam or CO_2 system (not required by the U.S. Coast Guard for cargo ships) and a receptacle containing sand or sawdust impregnated with soda,

In ships over 2000 gross tons, steam or CO_2 smothering system for cargo holds, except in the following cases: (1) If steel hatch covers and vent closures are fitted, (2) if the ship is intended to carry only coal or ore cargoes, or (3) if the ship is engaged in voyages of very short duration.

Lifesaving Appliances

One of the most important changes in the lifesaving requirements of the new Convention is the elimination of all types of boats except class 1. In other words, all lifeboats must now have rigid sides and internal buoyancy. Furthermore, they cannot be less than 24 feet in length except in unusual circumstances nor over 20 tons in weight when fully loaded. Life rafts cannot be substituted for some of the lifeboats as was previously permitted, except in the case of short international voyages, under special circumstances. In the latter case more severe subdivision requirements come into effect, as previously discussed. In the case of a ship carrying between 13 and 20 boats, one of the boats must be fitted with hand-propelling gear or be a class 2 motorboat, in addition to the one class 1 motorboat previously required. In addition to the radio equipment for motor lifeboats required in the old Convention, all passenger ships carrying less than 20 lifeboats must now also be equipped with a portable transmitter and receiver. A new provision requires that means be provided to prevent water from overboard discharges flowing into the boats. It should be noted that all of these changes embody an advance over the U.S. Coast Guard rules.

Cargo ships are now included, and as in the U.S. Coast Guard rules, they are required to carry fully equipped boats having sufficient capacity on either side for all persons on board. Tankers must carry at least four boats, two located aft and two on the bridge erection. Periodic boat drills are required. On cargo ships over 1600 gross tons at least one boat must be a motor boat or other mechanically propelled boat, a requirement which is in excess of present U.S. Coast Guard rules. Although the Coast Guard does



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not require wire boat falls and winches on cargo ships, they are required by the new Convention.

Additional lifeboat equipment is now required, which is in excess of present Coast Guard rules:

Three quarts of fresh water per person (instead of one),

Bilge keels or keel rails to which persons may cling if the boat is overturned,

First aid outfit and jack knife with can opener,

Two buoyant heaving lines,

A manual pump,

Blankets (in cold climates).

Other Modifications

The following other modifications appearing in the new Convention and applying to passenger ships may be noted, all of which conform with existing U.S. Coast Guard rules:

Two boats to be of suitable size and equipment for service as rescue boats,

Davits to be of gravity or luffing type if boat is over four tons in weight loaded (Coast Guard: 5000 lbs.),

Wire falls and winches to be installed, unless boats are located so close to the water as to make this requirement unnecessary,

Buoyant apparatus for 25% of the persons on board to be provided in addition to the lifeboats,

All boats of over 60 person capacity to be either motorboats or to be fitted with hand propelling gear (formerly all over 100 persons to be motorboats),

Motorboats (except for the new class 2) to have a speed of 6 knots, to carry fuel for 24 hours operation, and to be propelled by a Diesel engine (Coast Guard rules do not specify the type of engine),

Line throwing apparatus to have range of 250 yards with reasonable accuracy,

Davit life lines to be provided.

Conclusions

From the above discussion it may be seen that although the new fire protection provisions of the 1948 Convention are a distinct advance over the 1929 Convention, they will have only minor effects on present United States practice. In the case of lifesaving appliances, some of the changes do represent advances over the U.S. Coast Guard rules, however. Requirements for fire protection and lifesaving appliances for cargo vessels are now included in the Convention, but the requirements do not differ appreciably from present Coast Guard standards.

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PLANNED MAINTENANCE OF ELECTRIC MOTORS

By THOMAS P. NACINOVICH
Electrical Engineer
George G. Sharp

The old proverb, "An ounce of prevention is worth a pound of cure," can never be more aptly applied than to the maintenance of electric motors. A planned maintenance inspection system will not only add many years to the life of the equipment, but it will also assure practically continuous operation. The system should provide for cleaning, examining and adjusting, for maintenance of service records and for replacement of spare parts. It must be systematic, periodic and conscientiously followed.

The frequency of inspection will vary with the age of equipment, importance of the service, type of motor and the nature of the inspection but, in general, the following schedule should prove satisfactory:

Every day

(For propulsion auxiliaries, refrigeration and similar vital motors only).

1. Feel for evidence of overheating of frames and bearings, and for vibration.
2. Check the motor surroundings for steam leaks, dripping water and debris near motor which may restrict ventilation to the motor.

Every week

(All motors).

1. Blow out dust using an air blast of not over 20 lbs. pressure.
2. Examine commutator and brushes for sparking, wear, etc.
3. Check for oil or grease on shaft as evidence of overlubrication or bearing wear.
4. Run motor and check for any unusual condition, noise and odors.
5. Open drain cocks on all watertight motors to drain condensation.
6. The non-vital motors at this time should be checked for the daily inspection items listed for vital motors.

Every three to six months

1. Thoroughly clean motor, wipe commutator and brushes, check field coils for tightness. Check commutators for high bars or high mica.
2. Check brushes for wear, assure that they ride free in holders, check brush position and brush spring pressure. Replace brushes more than half worn.
3. Check grease in ball or roller bearings, refill as required. Drain and renew oil in sleeve bearings.
4. Check for loose connections.
5. Check operating speeds.
6. Measure insulation resistance.
7. Check mounting bolts, end shield and pulley bolts.
8. Reorder spare parts used during the period.

Every twelve months

1. Drain and renew grease in ball and roller bearings.
2. Clean and undercut commutator if necessary.
3. Check air gaps with feeler gage for bearing wear.
4. Check for loose armature bands, and loose armature coils and commutator connections.
5. Clean magnetic dirt that may be hanging on poles.

Cleanliness

An almost fanatic insistence on cleanliness is the surest way of obtaining trouble-free operation of electrical equipment. Accumulations of dust and dirt on windings and in frame will increase the operating temperature of the motor and contribute to insulation breakdown. The motors should always be kept dry, clean and free from foreign material. Gasketed cover plates and protective screens should always be securely fastened. Totally enclosed motors, especially A.C. motors, will require less frequent cleaning.

Grease and oil can be removed by carbon-tetrachloride and dust can be blown out by the use of low air pressure. Too high air pressure should not be used as it may loosen insulation or coils and blow the dirt deeper between the windings. Care should be taken not to use an excess of carbon-tetrachloride as it may soften the insulation. When used, workmen should be warned against breathing its toxic fumes.

Bearings and Lubrication

Faulty bearings probably cause more motor failures than any other type of trouble and the life and quietness of operation of ball and roller bearings depends almost entirely on cleanliness and proper lubrication. Faulty bearings can generally be found during the periodic inspection by abnormal heating of the bearing housing and noise which usually accompanies it. Abnormal heating can be quickly detected as the bearing housing will be much hotter than the surrounding end shields.

Great care should be taken to prevent dirt from coming into contact with bearings and bearing housings should never be opened under conditions which would permit entrance of dirt.

Proper lubrication of sleeve bearings requires that oil wells be kept filled to proper level, that the oil rings are free to turn, and that oil of correct viscosity and composition be used.

Proper lubrication of ball and roller

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OPERATING IDEAS

FOR MARINE SUPERINTENDENTS, PORT ENGINEERS, PORT CAPTAINS AND OTHER OPERATING EXECUTIVES

bearings requires only a small amount of grease sufficient to maintain a film of lubricant over the rollers or balls and raceways. Too much grease in a bearing will cause churning, overheating, deterioration of the grease, and damage to the bearing. The relief plug should always be removed before grease is forced into a bearing and the motor should be made to run long enough after the grease is added to expel the excess grease before the relief plug is reinstalled.

The recommendations of the motor manufacturer should be followed in selecting the grease used. Sodium base soap greases are generally recommended because of their high resistance to gumming, drying and oxidizing.

It is believed that on shipboard more motors are damaged by over-lubrication, including use of wrong type lubricant, than by the lack of lubrication. This is especially true of the more accessible motors. In recent years, the trend is for naval architects to specify grease fittings, requiring grease guns, in lieu of grease cups. While this may tend to reduce the number of cases of overlubrication, even with grease guns, the efforts of the operating engineer in keeping a close check on the methods and frequency of lubrication will be rewarded in obtaining a more satisfactory operation of his motors.

Windings and Insulation

The megohm resistance between the motor windings and the frame is the best indication of the condition of windings and their insulation. The insulation resistance values to have significant meaning should always be taken under the same conditions, that is, with the motor at its operating temperature. The American Institute of Electrical Engineers have established the following formula for establishing the minimum insulation resistance:

$$\text{MEGOHMS} = \frac{\text{Rated Voltage of Motor}}{\frac{\text{Rated KVA}}{100} + 1000}$$

For average size shipboard motors this will work out approximately as follows:

115 volt motors — 0.1 megohms
230 volt motors — 0.2 megohms
440 volt motors — 0.4 megohms

The above values are the minimum values at which it is safe to allow a motor to operate and generally the insulation resistances run in the order of one to twenty or thirty megohms. Whenever the insulation resistance is found to be below one megohm, it is good practice to start looking for the cause, particularly if on successive readings it is found that the trend is downward.

Low insulation resistance usually is an indication of dampness in the windings which may be removed by local application of heat. In the more severe cases, the motor should be removed to an oven for baking.

On some vessels, large motors that are subject to condensation, such as deck machinery motors, are provided with strip heaters to prevent condensation. Care should be taken to assure that these heaters are energized whenever the motors are shut down and subject to moisture.

The motor windings should be cleaned at intervals specified in the planned maintenance schedule. Loose dirt may be blown out or removed with a dry rag. As previously stated, carbon tetrachloride should be used sparingly in order not to soften the insulation.

If the insulation resistance is below one megohm and the motor has been in operation for two years or more, it is good practice to overhaul the motor completely and bake the windings. Whenever a motor is removed to a shop and it requires baking, it is well to apply baking varnish to all coils.

Air-drying varnish should never be applied to a coil while the insulation resistance is below one megohm. Application of varnish to a coil with low insulation resistance will only seal the moisture in the winding.

Brushes and Commutators

In addition to windings, bearings, and general cleanliness, direct current motors add the brushes, brush rigging and commutator to the maintenance problem.

Proper commutation is generally reflected in absence of sparking, quiet operation, long life of brushes, and a uniform brown polished appearance of the commutator.

For successful operation, the motor depends upon a smooth film of cuprous oxide and carbon which forms on the surface of the commutator. This film serves to lubricate the movement between the commutator and brushes and thus reduces brush wear. New motors and motors with commutators that had just been sanded, stoned or turned down should be operated for several hours before being loaded to allow for the formation of this film.

Brushes should move freely in the holders, but should not be loose. The springs should produce a brush pressure of approximately two pounds per square inch of the brush contact area. As brushes vary in composition, hardness, etc., it is good practice to always use brushes recommended by motor manufacturer.

Rough commutators should be made smooth by sanding or stoning and in extreme cases they are turned down in a lathe. When a commutator is turned down or new brushes are installed, the brushes must be seated or sanded so that their contact surface will fit the contours of the commutator.

Conclusion

A planned maintenance inspection system should provide for recording of all inspections, repairs, insulation resistance readings, and rotor or armature clearances for each motor. A record or check-off chart should be maintained to show the schedule of inspection, cleaning and lubrication. A periodic analysis of these records will quickly reveal recurrent faults, the cause of which may not be readily apparent, and trends which, if not corrected, will result in faults.

Record card systems have been developed and printed for a planned maintenance system which, with modifications to suit the particular requirements, may be adapted to any particular operator's needs.

The manufacturer's instruction books provided with motors contain a wealth of information required for proper maintenance. It would seem to be good practice periodically to check the instruction books available on the ship and to reorder any missing books.

At times, it is extremely difficult to obtain certain necessary motor data because of general practice of painters to ignore nameplates. It would be good practice to insist upon nameplates being covered during painting of the motor.

In addition to motor planned maintenance discussed herein, maintenance inspection systems should also be planned for controllers, generators, switchboards, distribution system, etc. as the failure of any of these may be just as detrimental to the operation of the ship as the breakdown of a motor.

In view of the present day high costs of maintenance, it would seem desirable that the ship operator, the naval architect and others involved in ship construction give serious consideration to the use of totally enclosed motors in engine rooms and boiler rooms. The oil fumes, condensation and dust particles which prevail in the atmosphere at these locations are generally deposited on motor windings and other internal parts and will over a period of time cause breakdowns. If the present trend towards the use of alternating current systems is combined with the use of totally enclosed motors, the ship operators will find that their electric plant will require much less maintenance and that operating expenses and delays caused by electrical breakdowns will be materially reduced.

THE SOCIETY OF PORT ENGINEERS

(Continued from Page 39)

on hydraulic steering gears and associated equipment aboard ship. During the war Mr. Crough was appointed by the Navy to give instruction in the handling of hydraulic steering equipment.

Larry Rapp of C. C. Moore & Company will present the history of steam boilers. Mr. Rapp has dug up some very interesting facts about boilers, one being that a steam boiler carrying 1,500 lbs. pressure was operated 300 years ago.

L. M. Mathis of the Doran Company will talk on propellers and propeller developments and describe new designs on hydro foil sections.

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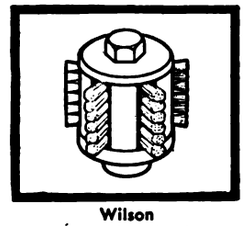

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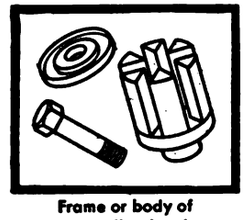

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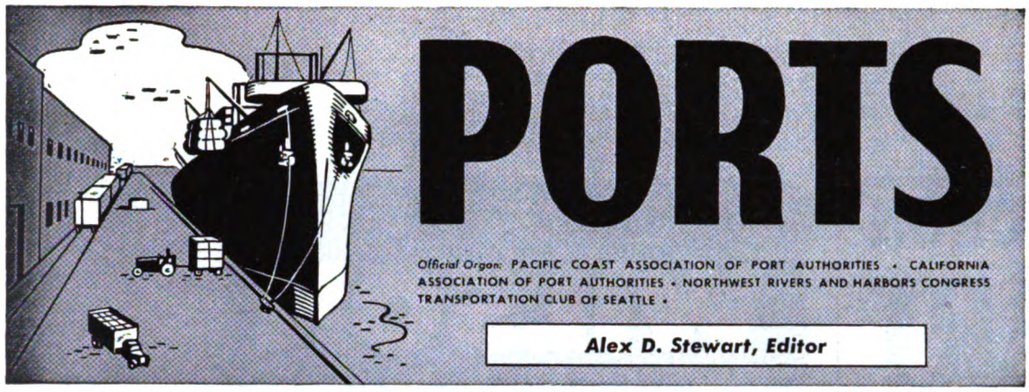

E. O. Jewell New Executive Director for Port of Norfolk

E. O. Jewell, internationally known director of the Port of New Orleans for the last six years, has resigned to become executive director of the Port of Norfolk, according to an announcement by E. S. Binnings, president of the board of commissioners of the Port of New Orleans. Mr. Binnings states E. H. Lockenberg, director of operations for the port, had been named acting manager.

As executive director of the Port of Norfolk, Mr. Jewell will have supervision of business and port facilities of the entire Hampton Roads, Virginia district. This includes Norfolk, Newport News and Hampton Roads, all part of a group of North Atlantic ports who recently joined forces.

Mr. Jewell was one of the handful of businessmen who founded International House, New Orleans, the non-profit organization dedicated to world peace, trade and understanding and for the past three years has been chairman of the International House World Trade Development Committee. Under his committee's supervision, International House's World Trade Development Department has made more than 18,000 contacts between importers and exporters all over the world, and itself, has been instrumental in attracting more business through the Port of New Orleans, according to the commission.

E. O. JEWELL, who has joined the Port of Norfolk, Virginia, in the capacity of Executive Director.

The future Norfolk Port executive director joined the Port of New Orleans in 1940 as director of commerce and 18 months later was elevated to the position of general manager. During that time the Port reports its business increased from a figure of $250,000,000 in 1940 to an all time high of $1,250,000,000 in imports and exports handled in 1947, and during the fiscal year ending June 30th, the Port made a record-breaking profit of $2,419,246.71.

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New $1,734,000 Wharf For Port of Houston

Ground has been broken for the Port of Houston's newest major project—a $1,734,000 wharf.

The new dock will be equivalent in height to an 11-story building. Fifty feet wide and a full two blocks long, it will rise four stories above water level upon completion. Foundations equal to a seven-story building will support the structure.

Unique in design, the dock will be one of the first along the Gulf Coast to depart from conventional wharf construction. Instead of the usual concrete pilings, which require much work over the open water, a system of interlaced steel cells will support an earth-filled foundation for the dock surface and building.

According to Houston port authorities the use of this new design in construction is expected to save $500,000 at no sacrifice of security or use.

There will be three sets of railroad tracks to serve the wharf, a considerable length of paved road and railroad trackage, a parking area for vehicles, and a steel bulkhead around the corner of the Turning Basin.

The wharf, the first of several the Houston Navigation District will build under a $9,000,000 improvement program, will be completed within 18 months. It is part of an overall $32,000,000 worth of expansion projects.

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Fiegenbaum Succeeds Coakley On California Harbor Board

B. J. Fiegenbaum, San Francisco attorney, and former state assemblyman, was named to the Board of State Harbor Commissioners by Governor Earl Warren.

He will replace Thomas Coakley, who has resigned to devote more time to his law business.

Coakley submitted his resignation several months ago, but it wasn't acted upon until Governor Warren's announcement. Fiegenbaum will represent San Francisco harbor on the board and will serve for a term ending May 1, 1949.

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Mobile To Get New Ore Tipple

Alabama Governor James E. Folsom has authorized immediate construction of a new $550,000 ore tipple at the state docks at Mobile and ordered planning work to proceed for two new berths. Estimated cost of the program, brought about by prospects of new business, is in excess of $3,000,000.

Docks director Henry W. Sweet said the new ore handling plant will be financed from dock revenues, while financing of the two proposed berths is still to be worked out.

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New Corporation Takes Over Six FBL Terminals

Formation of the Waterways Terminals Corporation to take over operation of six terminals of the Federal Barge Lines, including the one at New Orleans, has been announced.

The other terminals are at St. Louis, Missouri, East St. Louis, Illinois, Vicksburg, Mississippi; Chicago and Peoria, Illinois.

Officers of the new firm are C. J. LaMothe, St. Louis, president; W. W. Higget, Chicago, vice president, and P. W. Frenzel, St. Paul, secretary treasurer.

LaMothe said the firm will help to coordinate rail and water transportation and open terminals to all water-borne cargo; not only that of the Federal Barge Lines.

Captain A. C. Ingersoll, head of the Federal Barge Lines, said the terminals are now handling about 2,000,000 tons of freight each year and that the change should result in a financial saving.

MORT S. WOODWARD, manager, Baker Dock Company, Tacoma, Washington, newly-elected 1948-1949 president, Transportation Club of Tacoma.

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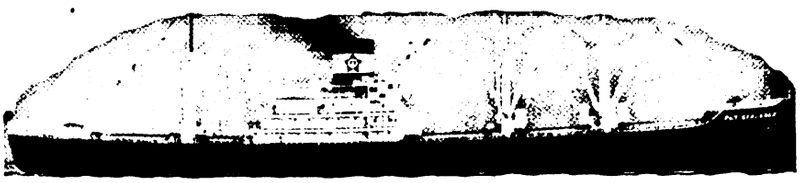

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Preserving Our Reserve Fleet

(Continued from Page 33)

over-all costs are the answer here as in most such problems. It is intended that additional information on this matter will be available to interested persons after further development and after detailed analyses of comparative costs are tabulated.

Fungi and Mold Growths

The problems brought about by fungi and mold growths are of serious concern, particularly where insulation of electrical equipment and windings must be preserved. Our attack on this problem has been two-fold; first, a special type insulation quality air drying varnish containing a fungicidal agent is used where needed after all traces of oil, grease or debris have been removed from electrical windings; and second, the Division of Biological Sciences, University of Pittsburgh, is now under contract for the development of a fungicidal compound to kill existing growths and to inhibit new growths for an approximate two-year period. This latter may be applied through use of a pressure spray "bomb" similar to insecticide bombs or with regular atomizing spray equipment and that leaves no skin or residue which may be deleterious to the materials treated.

Latest reports on this project, which will require about three more months to complete, indicate that the final development will meet or be very close to the optimum set in our specification. The successful development of such a fungicidal compound for use on electrical equipment is of real importance and it will be of immeasurable value in the marine field, for use on reserve and operating vessels, and to the entire electrical equipment field.

Preservation of Under-Water Body

A major operation in the preservation of permanent reserve vessels will be the cleaning by sand blast of and the application of long life anti-corrosive compounds on the under-water body of each vessel. This part of our program has been delayed due to conditions beyond our control, but every effort is being made to start this work during the 1949 calendar year. Examinations made to date of the wind and water-line areas and bottoms of vessels in lay-up at fleet sites show conclusively that sand blasting down to clean grey metal must be done if such areas are to be properly preserved and if long life type compounds are to properly adhere to those surfaces.

In order to be prepared with sound information regarding the protective and the lasting qualities of the various compounds available by the time our dry-docking program is activated, tests have been under way at all permanent fleet sites for over a year. Through the use of test plates, by limited application on service craft and by application on reserve vessel water-line areas after such vessels have been careened, a total of twenty-four products have been placed on test to date. In this manner data on the actual value of each compound when immersed in the waters of each fleet site are obtained. Each vendor has been invited to participate in the testing of his product.

Data collected to date confirm our belief that compounds which will adequately protect against serious corrosion for a period of five to seven years without "touch up" are available. Results with some compounds vary greatly at the various sites, others have failed at all sites and others are proving very good to excellent at all sites. Information developed in connection with test plate racks being conducted under other auspices is obtained for consideration jointly with results of our own tests. Complete evaluation of results will not be tabulated until a short time before procurement of compound in volume for the dry-docking program. Our tests will be continued as long as the reserve fleets exist so that new developments may be properly considered if such become available.

Many other tests and experiments are being conducted in order to develop the most effective manner and methods to ensure adequate preservation at minimum cost. Our organization takes pride in its accomplishments to date, but at the same time realizes it has behind it a record of some successes and some errors and has ahead of it many problems and hard work.

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Fred Bellaria, formerly chief estimator for Todd Pacific Shipyards Corporation's Alameda yard, has been promoted to assistant general superintendent of the firm's San Francisco operations.

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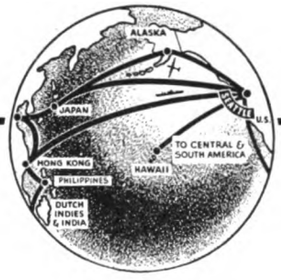

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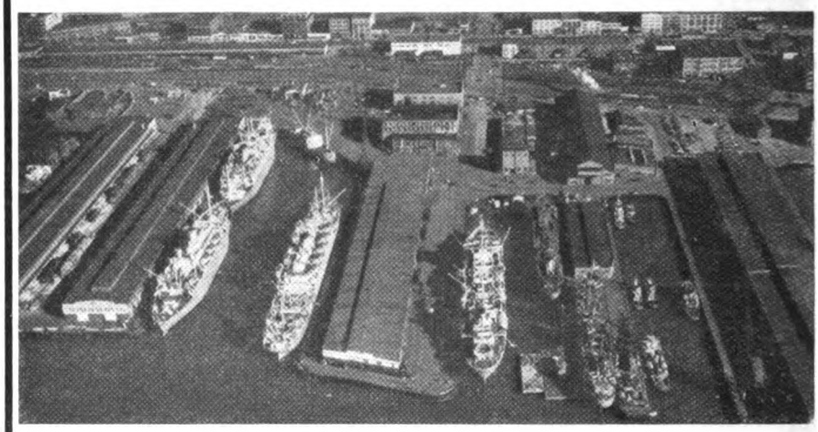

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WASHINGTON

(Continued from Page 37)

gress extends the agency's chartering authority beyond next February 28:

Trade	Actual No. of Vessels as of Sept. 15, 1948	Estimated No. of Vessels as of Feb. 28, 1949	June 30, 1949
Bulk cargo (Foreign) Est.	344	280	170
Berth Service (Frt. Foreign)	121	80	50
Berth Service (Pass. Foreign)	8	8	8
Coastwise & Intercoastal	51	41	40
Alaska	18	3	6
Philippine Rehabilitation	10	9	9
	552	421	283

Status of U.S. flag Privately-owned	Sept. 15, 1948 No. of Ships	June 30, 1949 No. of Ships Est.
Domestic & Non-Contiguous Service (Frt)	119	119
Domestic & Non-Contiguous Service (Comb. & Pass.)	7	7
Berth Service (Frt.)	386	420
Berth Service (Comb. & Pass) Foreign	29	34
Bulk Service (Foreign)	100	107
Temporarily Inactive	57	60
	698	747
Martime Commission bareboat chartered ships	552	283
Maritime Commission C-4's under G.A.A.	10	12
	1260	1042

Lubricating Marine Diesels

(Continued from Page 32)

principal contaminant of crankcase oil is water, either fresh or salt depending upon the type used for engine cooling. A certain number of leaks are unavoidable and condensation will always take place in various parts of the system. Careful centrifuging is an effective means for removing water. The oil can be cleaned up much better if the temperature to the centrifuge is maintained at about 185°F, since the oil viscosity will be lower and there will be a greater density difference between the contaminating water and solids and the oil than there would be at the lower temperatures. The centrifuge can do its work better if the density differences are high. The bowl cake removed from the purifier consists mainly of carbon although some oil and water may be present with the latter tied up in emulsion form. Rust, scale and dirt are the other constituents. The location of the centrifuge suction is also of great importance. It should terminate at the lowest point of the sump or other reservoir system so that it can pick up the water and heavy particles that have a tendency to fall out at these low spots.

Water in marine diesel engine lube oil is not as serious a proposition as it is in some engines that are operating at higher temperatures with the crankcase oil temperature above the boiling point of water. It is believed that crankshafts sometimes fail because of water in the lubricating oil under these conditions. A slug of water in the oil hitting a hot journal will flash into vapor and disrupt the oil film so that faulty lubrication causes metal to metal contact and scoring of the journal.

Crankcase Explosions

The oil used for piston cooling is generally part of the same batch as that used for bearing lubrication. Maintaining a continuous flow to an oil cooled piston is of prime importance because an interruption may cause a great deal of damage. There have been cases where the blast of the combustion flame has actually burned a hole through the piston where for some reason the flow of oil had been shut off. A complete disintegration of the piston with subsequent damage to the engine or a crankcase explosion has been known to happen.

The only time crankcase explosions ever do happen is when something is heated up far beyond normal running temperatures. The spontaneous ignition of most petroleum products is somewhere around 500°F. and this means that some part must be very hot in order to set off an explosion of either lube oil or fuel oil vapors mixed with the correct amount of air to be within the inflammable limits. Some of the conditions that have caused crankcase explosions are:

(1) Overheated pistons due to lack of lubrication or cooling.
(2) Failure of bearing metal in wrist pin bushing that permitted contact of steel pin with steel bushing back.
(3) Overheated crankshaft journal caused by rotation of bearing insert that cut off oil flow.
(4) Misalignment that caused crosshead to run hot in guide, so that "pick-up" of the metal and very severe scoring took place.

Since lubricating oil is a petroleum product composed of carbon and hydrogen, it will burn or explode if atomized and mixed with the right proportion of air in the presence of a spark, red hot surface, or other condition that will supply the necessary ignition temperature. It can happen with or without fuel oil dilution.

Condition of Piston Surfaces

The condition of the piston surfaces is a much better indicator of the lubricating oil quality than is anything to be found in the crankcase, and consequently the oil is expected to keep the rings free and liner wear down.

There is another factor to be taken into account when sizing up the job the lubricating oil is doing on the pistons and that is the fuel quality. High sulphur fuels cause increased liner wear and heavier piston ring groove and skirt deposits. High wear may be caused by a layer of scale in water jackets that reduces the heat transfer rate and makes the liners run so hot that the lubricating oil cannot do its work. The rings on a water or oil cooled piston may also stick or show rapid wear for a similar reason.

The amount of carbon build-up in the exhaust ports is sometimes due to the use of an excessive amount of cylinder oil or it may be due to the use of an improper grade of oil.

There are several guides that should be used in the selection of the proper lubricating oil for a diesel engine. The engine builder may have specifications that call for certain limits on viscosity, flash, pour point and other physical characteristics or a certain "S.A.E." classification may be called for. Some builders have approval lists calling for oils by brand names.

Detergent Oils

Detergent oils are sometimes specified especially for high speed and medium speed supercharged engines. This is an additive type oil that exerts a cleansing action along with the regular lubricating properties. It has not been demonstrated as yet that there is anything to be gained by using detergent oils in large slow speed engines, but they certainly are superior lubricants for the smaller engines.

A detergent oil will become black almost immediately after being put into a diesel engine. This should not be interpreted as any sort of failure for this oil must carry finely divided carbon in suspension if it is to perform its function of keeping the engine clean. The additive in the oil may discolor certain bearings such as the copper lead variety but this does no harm. There have been cases where bearings have been discarded after supposed failures when the tool marks were still on the surface, and the metal was intact. The only difference from a new bearing was the discoloration.

Stocks from selected crudes are used and are processed to certain specifications by many involved operations that we will not discuss here. The finished product is given routine laboratory tests that have been found to predict fairly well the performance of the oil in service. The data may look very well on paper but unfortunately the diesel engine cannot read, so the next step is the actual running of the lubricant in laboratory test engines. After the test runs, the engines are dismantled, wear measurements taken, bearings checked for weight loss due to possible corrosion, and all pistons and rings are rated on a numerical scale by trained engine men for carbon and varnish deposits.

The next step is to put the product out into field service or aboard ship for final check-up under regular operating con-

(Continued on Page 60)

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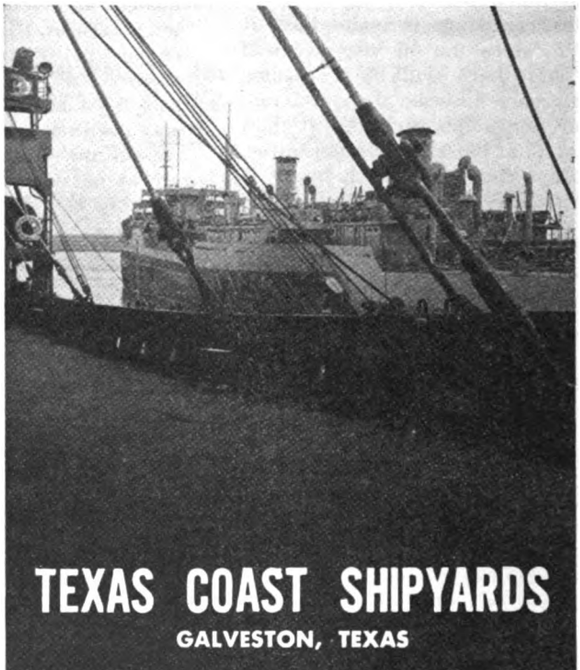

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G.E. To Build Equipment For New APL Liners

Gear turbine units that will power the three-round-the-world passenger liners under construction for the American President Lines, will be constructed by the General Electric Company who have received the orders from the New York Shipbuilding Corp.

The ships, costing more than $10 million each, will be 536 feet long with a 73 foot beam. They will displace 19,600 tons and carry 228 passengers. Cruising speed of 19 knots will allow the ships to circumnavigate the world in 14 weeks.

The cross-compound turbines, equipped with double-reduction, articulated-type gears, will deliver 12,500 shp at 92 rpm. Steam conditions will be 600 psi at 840F at the turbine inlet. The turbines and gears will be constructed at G.E.'s turbine plant in Lynn, Massachusetts, and are scheduled for delivery in late 1949.

In addition, G. E. will furnish the three 600 kw ship's service turbine-generator sets for auxiliary power and lights, switchboards, and other electrical equipment.

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Everett Pacific Reconverts Another Waterman Vessel

Everett Pacific Shipbuilding and Dry Dock Company, Everett, Washington, have been awarded a contract for the reconversion of Waterman Steamship Corporation's vessel, HERALD OF THE MORNING. This vessel makes a total of three such jobs to go to Everett, work on the YOUNG AMERICA and the GOLDEN CITY having been previously started.

Built as a C2-S-B1 cargo vessel she was converted to a Navy Personnel Attack Transport for wartime service and later was laid up in the Maritime Commission Reserve Fleet at Suisun Bay, California.

Purchased by Waterman Steamship Corporation, the HERALD OF THE MORNING is one of eleven C-2's acquired by this operator from the U.S. Maritime Commission. Specifications call for removal of all defense features and restoration throughout to a design C2-S-B1 dry cargo vessel. When the reconversion is finished, staterooms will be outfitted to accommodate twelve passengers. The work involved is to be completed in 85 calendar days, including transfer from San Francisco to Everett, which sets the completion date for late January, 1949.

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Pacific Coast Engineering Company, Alameda, California, has started construction of a 74-foot steel tug, costing approximately $175,000, for the California State Board of Harbor Commissioners, to be powered by an Enterprise Diesel. The tug will be named the GOVERNOR WARREN and will replace the Board's 70-year old wooden steam tug GOVERNOR IRWIN. Completion is expected in February.

PACIFIC NORTHWEST REPRESENTATIVES of E. F. Drew & Company. Left to right: D. B. HAYWARD and KENNETH AITKEN. Mr. Hayward has represented the Drew company at Seattle for the past five years and recently was joined by Mr. Aitken, who will cover industrial and marine for the company's Ameroid products. Mr. Hayward formerly was with Todd Shipyards at Tacoma and Mr. Aitken once sailed for Pacific Tankers as a chief engineer.

ANNUAL SALES and engineering conference of the western representatives, both marine and industrial, of the Leslie Company, Lyndhurst, New Jersey, was held in San Francisco in October and presided over by JOHN S. LESLIE, President of the company. With Mr. Leslie, on his visit to the West Coast, was STEN SODERBERG, Chief Engineer of the firm.
From left to right, standing: CLAUDE SMITH, Claude Smith Co., San Francisco; ART LEWIS, Cordes Bros., San Francisco; ED PHELPS, Adolf Frese Corp., Los Angeles; ART PETERSON, Landes, Zachary & Peterson, Denver; RALPH MURRAY, Cordes Bros. San Francisco; LOUIS SERRO, J. M. Costello Sup. Co., Wilmington; FRED NITCHY, John H. Marvin Co., Portland; ED GILES, John H. Marvin Co., Seattle; LOWELL JETT, Cordes Bros., San Francisco.
Seated, left to right: RAY MOSER, Adolf Frese Corp., Los Angeles; JOHN H. CORDES, Cordes Bros., San Francisco; STEN SODERBERG, Chief Engineer, Leslie Co., JOHN S. LESLIE, President, Leslie Co., JOS. COSTELLO and AL BORO of the J. M. Costello Supply Co., Wilmington.
Not shown is M. E. ADAMS, Pacific Controls Co., Vancouver, B. C., who also attended.

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MAR-DUSTRIAL SALES AND SERVICE, Portland, Oregon, partners . . . Left to right: HARRY CROOK, M. C. "MORRY" HANSEN, KENNETH CARPENTER.

⚓ ⚓ ⚓

Portland Firm to Handle Worthington Marine Parts

From new company quarters at 2616 Western Avenue, Seattle, E. D. Shively, Northwest manager, Worthington Pump and Machinery Corporation has announced the appointment of Mar-Dustrial Sales and Service, Swan Island, Portland, Oregon as marine parts distributors in the Portland area.

Mar-Dustrial Sales and Service is a partnership of M. C. Hansen, Kenneth Carpenter and Harry Crook. All were with the Maritime Commission at Portland during the war. Hansen was chief of the inventory section and procurement division. Carpenter worked with Hansen as head of the engine department. Crook was in the marine sales division.

In addition to Worthington parts, the firm carries stocks of electrical and mechanical spares for EC2's and Victories, metal life boats, galley ranges, and steam cargo winches and also acts as marine representatives in Oregon for Federal Paint Company, Plant Asbestos and Rubber Company, and Lubaid Company.

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Yorcalbro Tubes Re-Appoints Geo. Swett Distributor

George E. Swett, manager of George E. Swett & Co., Engineers, reports Yorcalbro Aluminum Brass Condenser Tubes used in the marine field are again available.

According to Mr. Swett these tubes were first installed on famous ships registered in San Francisco a number of years before the war started, and these installations are still in service requiring only a negligible percentage of tube replacements over the years. In fact, Mr. Swett continues, the life of these tubes is so much longer than ordinary tubes, to say nothing of the savings in maintenance and shut-down time for repairs, that they contribute a material saving in the operation of ships. There are 13½ million Yorcalbro Tubes now in service.

Mr. Swett states the serviceability of the Yorcalbro Tubes is not confined to marine condensers alone. They can be supplied for all forms of heat exchangers on board ship in which salt water comes into contact with the tubes, as, for example, in auxiliary condensers, air or oil coolers, compressor inter-coolers, salt water calorifiers and drain coolers. Another use is for sea-water mains and pipe lines.

⚓ ⚓ ⚓

Hagan Corp. Transfers San Francisco Offices

Hagan Corporation, combustion and chemical engineering firm, has transferred its San Francisco offices and laboratories to new quarters in the Manufacturers' Agents Exhibit Building, 200 Davis Street, San Francisco 11, California.

The new technical facilities will be used jointly by Hagan Corporation and its subsidiaries—Hall Laboratories, Inc., and Calgow, Inc.

⚓ ⚓ ⚓

Hart & Burns Names Bob Harris New Representative

New northern California representative for Hart & Burns, Inc., Riverside, California, marine paint manufacturers, is Robert F. Harris, formerly with Oliver J. Olson & Company, United Engineering Company, United States Army Transport Service, Grace Lines, Inc., Arne C. Storen and the War Shipbuilding Administration. Hart & Burns' heavy marine Navicote paints are distributed in San Francisco by the Haviside Company, Cincotta Brothers and Andreassen & Company, formerly Oweson & Company.

ROBERT F. HARRIS, new Northern California Representative for Hart & Burns, Inc. Riverside, California, marine paint manufacturers.

In the Portland area, Standard Marine Supply Inc., Jim Alex, handles the Hart & Burns heavy marine paints.

⚓ ⚓ ⚓

Aetna Marine Receives Contract Export Lines' New Ships

What is believed to be the largest and most complete contract of its type ever awarded to a joiner contractor in this country was given to Aetna Marine Corporation, subsidiary of Aetna Steel Products Corporation, according to Henry Kahr, chairman of the board of directors of the Aetna interests.

The contract covers joiner work on the two "Express Liners," Design PR-1534, to be built at the Quincy, Massachusetts shipyard of the Bethlehem Steel Company for the American Export Lines.

The interior accommodations for these vessels are being designed by Henry Dreyfuss, New York, internationally-known industrial designer. They represent the finest and most modern accommodations afloat, and include provisions for 972 passengers in three different classes, with 348 cabin class, 316 in the tourist class, and 308 in third class.

Included in Aetna's contract is the construction and furnishing of passenger, officer and crew accommodations, and public spaces as well as many other items of joiner work, continues Mr. Kahr's announcement.

Aetna Marine Corporation recently completed the outfitting of ss PRESIDENTS CLEVELAND and WILSON at Bethlehem-Alameda Shipyard.

⚓ ⚓ ⚓

E. J. Rome Heads SF District for Raytheon

New district manager of the Raytheon Manufacturing Company at San Francisco is Emile J. Rome, who has been that company's broadcast representative in the west with headquarters at Los Angeles. At San Francisco Mr. Rome has charge of sales and service of marine, broadcast and industrial equipment.

EMILE J. ROME, District Manager of the Raytheon Manufacturing Company at San Francisco.

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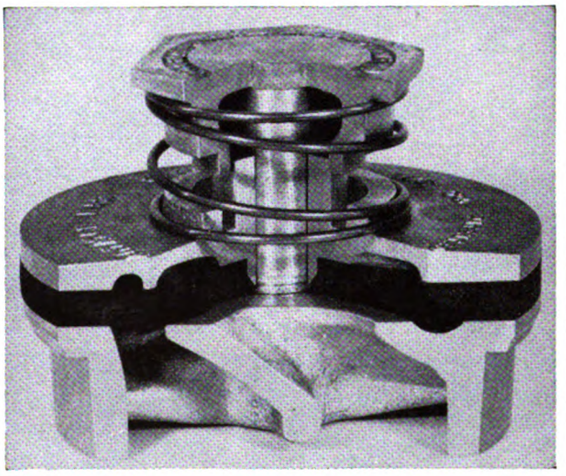

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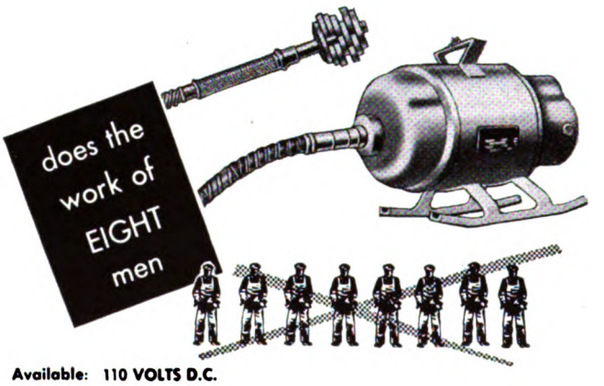

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Lubricating Marine Diesels

(Continued from Page 53)

ditions. In many cases the full-scale engine cannot be as completely dismantled for inspection as were the laboratory engines, but enough data is obtained to check performance.

Marine Research Program

Since large marine engines are so much different than any laboratory test engine, the Standard Oil Development Company has initiated a Marine Research Program on large diesels serving as main propulsion units in deep draft tank ships. One of these is a Sun-Doxford two-cycle, crosshead type, five-cylinder, opposed piston engine, using fresh water for piston cooling. It is rated at 7,500 shaft horsepower at 94 rpm.

Two others are Burmeister and Wain engines of the single-acting, two-cycle trunk type piston, using engine oil for piston cooling. Each seven-cylinder engine develops 2,050 indicated horsepower at 114 rpm.

The average fuel consumption for the Sun-Doxford engine is about 194 barrels per day, and the average daily lubricating oil consumption is 9.8 gallons of engine oil and 14.9 gallons of cylinder oil.

The two Burmeister and Wain engines use about 112 barrels of fuel per day and the average rate of consumption of lubricating oils are 58 gallons per day of engine oil and 12.9 gallons per day of cylinder oil.

It is estimated that it will take about a year to obtain conclusive results on each test batch of oil in these engines. Operating conditions will be carefully observed, the fuel quality will be kept uniform and all pertinent data will be collected during the test period when the ships will be on their regular runs. The most important results will be obtained at the overhaul period when pistons will be pulled for careful measurement and complete inspection comparable to that given laboratory engines. Piston deposits and ring and liner wear will be resolved down to a common denominator that will accurately show the performance level of various cylinder oils tested. The rating of the engine oils will be measured by their stability, in other words, how they stand up in service as shown by used oil analyses, the bearing conditions, and the deposits which are formed in the cooling chamber of the piston head. Piston rings will also be weighed accurately to show the amount of metal loss resulting from wear.

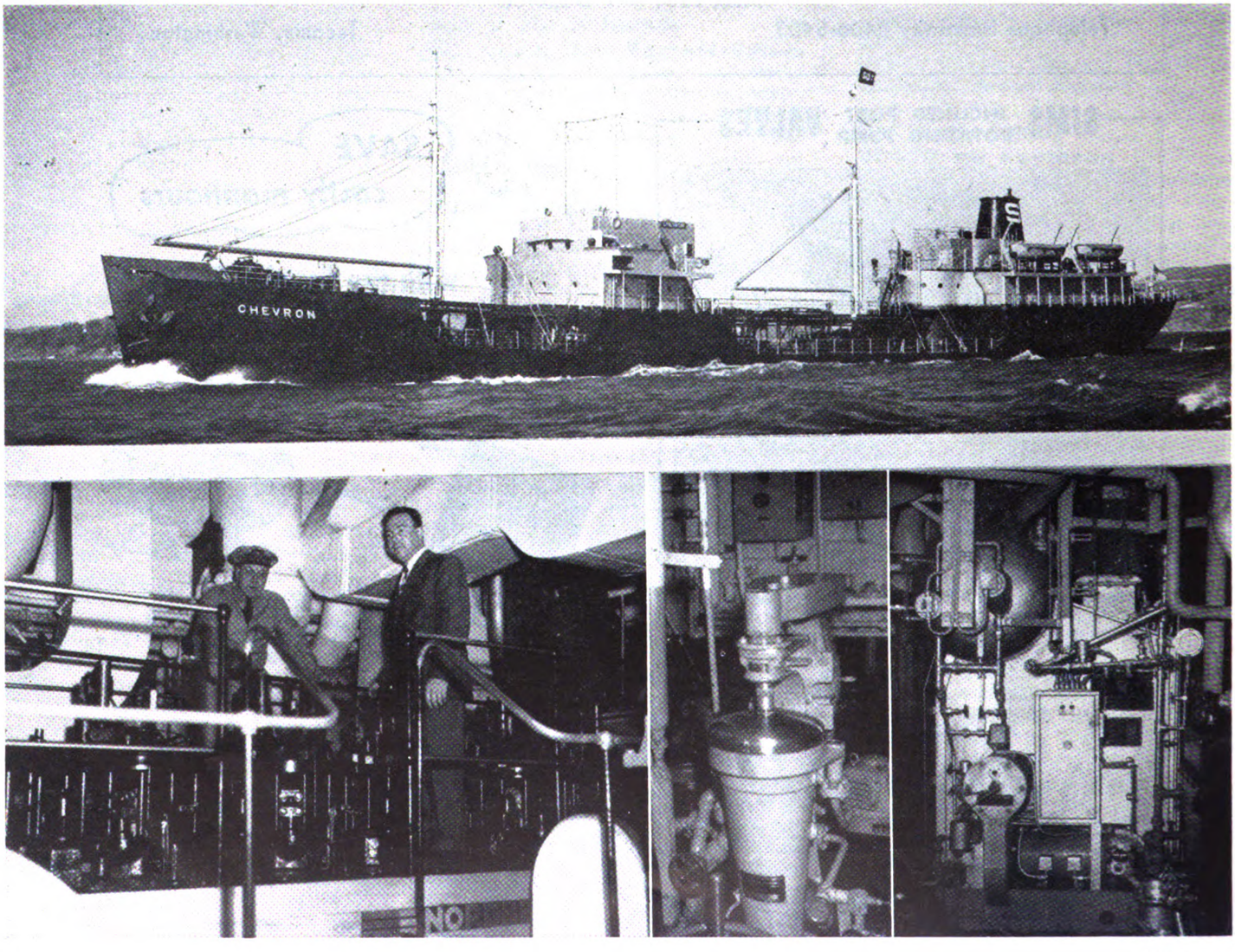
Running these tests will be quite costly, but it is felt that the information gained will be worth the expenditure.

The Standard Oil Development Company completed a similar program in the railroad field where a diesel locomotive operating in heavy duty freight service served as a rolling laboratory for the development of a heavy duty detergent railroad diesel oil. The results of this work were based principally on tear down inspections, as will be the case in the marine program.

⚓ ⚓ ⚓

Waterman Steamship Corporation has awarded the contract for the complete conversion of the C-2 ss DASHING WAVE to the Triple A Machine Shop, San Francisco, which has taken space at Pier 64 in that city to do the work. Todd Shipyards' Alameda yard will do the drydocking.

100,000 MILES WITHOUT MACHINERY DELAY . . . Powered by a Nordberg two-cycle six-cylinder Diesel, Standard of California's T1-M-BT2 CHEVRON completed approximately 125 voyages since she went into service two years ago, has covered around 100,000 miles transporting some 375,000 barrels of oil along the Pacific Coast as far north as Alaska and not once has a voyage been delayed because of machinery derangement.
ENGINEROOM ABOARD THE CHEVRON: Lower left photo shows GEORGE LIENHARD, right, Nordberg representative and WILLIAM H. MOORE, left, Chief Engineer, standing at the Nordberg main Diesel engine; center, Sharples oil purifier; right, Foster-Wheeler boiler.



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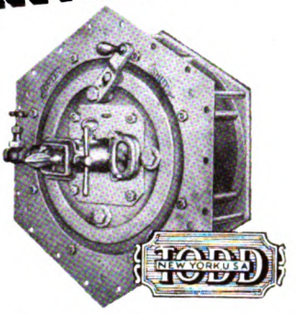

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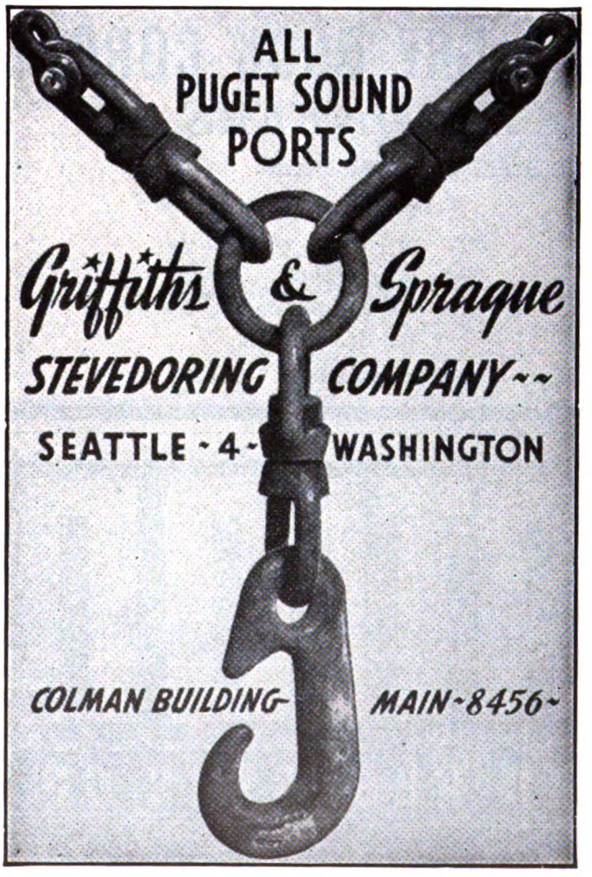

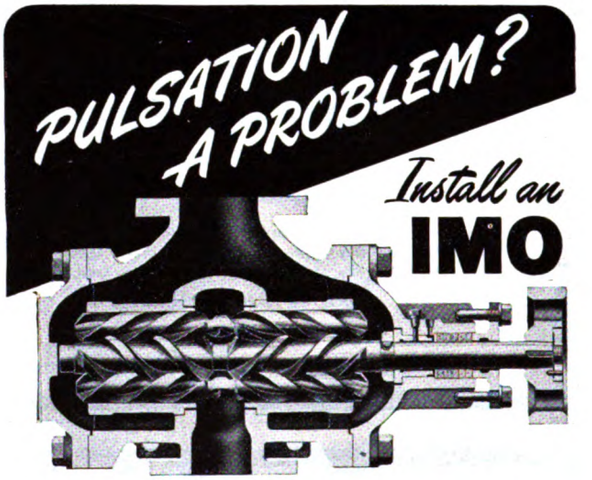

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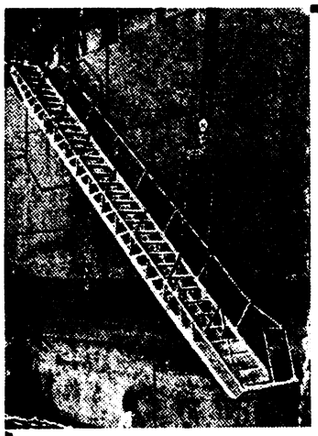

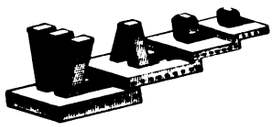

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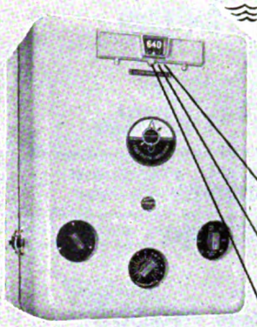

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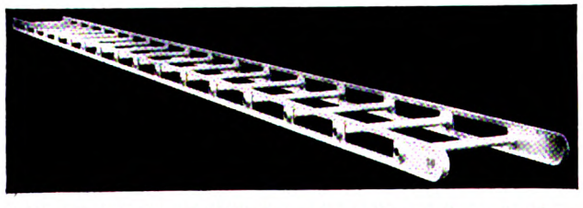

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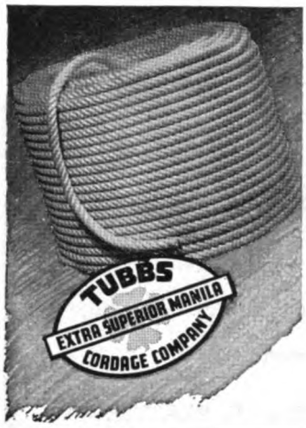

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ADVERTISER'S INDEX

Aerial Products, Inc. 12
Albina Engine & Machine Works 54
Aluminum Company of America ..... Inside Back Cover
Aluminum Ladder Co. 64
American Brass Co. 6
American Export Lines 57
American Hoist & Derrick Co. 54
American Mail Line 59
Arnessen Electric Co. 59
Atlas Paint & Varnish Co. 50
Babcock & Wilcox Co. 13
Baier & Associates 68
Baker Dock Co. 67
Bird-Archer Co. of California 67
Bludworth Marine 63
Boland Machine & Manufacturing Co. 67
Catalina Island Steamship Line 65
Cavanaugh Machine Works 65
Columbia Machine Works 66
Combustion Engineering Co., Inc. 23
Commercial Ship Repair ..... 34 & 35
Consolidated Services, Inc. 64
Cordes Bros. 66
Craig Shipbuilding Co. 63
Crane Packing Co. 66
Curtis Bay Towing Co., The 24
Dearborn Chemical Co. 65
De Laval Steam Turbine Co., The 61
Dravis Engineering & Machine Works 59
Drew & Co., E. F. 1
Everett Pacific Shipbuilding & Dry Dock Co. 64
Fairbanks, Morse & Co. 7
Ferran & Co., Inc., Chas. 63
Forster Shipbuilding Co., Inc. 55
General Engineering & Dry Dock Co. 62
Gibson, D. M. 52
Givy & Associates, M. J. 68
Gladding, McBean & Co. 67
Gow, Inc., Alexander 66
Great Western Cordage Co. 68
Griffiths & Sprague Stevedoring Co. 61
Hagan Corp. 4
Hanson, H. C. 68
Harbor Supply Co. 51
Hart & Burns, Inc. 47
Hendry Co., C. J. 41
Hiller, Paul W. 67
Horton Agency, Lou E. 68
International Nickel Co. 19
Isherwood & Co., Ltd., Sir Joseph W. 66
Jeans, Capt. Harvey A. 68
Kearfott Co., Inc. 66
Korody Marine Corp. 57
Long Beach, Port of 55
Luce & Co. 50
Mar-Dustrial Sales & Service 61
Marine Electric Co. (Portland) 55
Marine Electric Co. (San Francisco) 67
Marine & Industrial Supplies & Service, Inc. 65
Marine & Industrial Supply, Inc. 67
Marine Service, Inc. 67
Metropolitan Plumbing Supply Co. 65
Moore & Co., C. C., Engineers 13
Moore-McCormack Lines 43
Morrison & Bevilockway 67
National Malleable & Steel Castings Co. 21
Nickum & Sons, W. C. 68
Nordberg Manufacturing Co. Front Cover & 3
Nystrom, E. W. 68
O'Donnell Copper Works, E. M. 67
Pacific Marine Refrigeration Co. 65
Pacific Marine Supply Co. 49
Perry, L. C. 68
Pope & Talbot Lines 49
Puget Sound Bridge & Dredging Co. 66
Puget Sound Freight Lines 65
Raytheon Manufacturing Co. 16
Refractory Coatings Co. 68
Rober Co., W. H. 67
Roebling's Sons Co., John A. 11
Ross Heater & Manufacturing Co., Inc. 43
Rothschild International Stevedoring Co. 66
Seaboard Machinery Corp. 10
Seattle Marine Surveyors 68
Seattle, Port of 52
Selby, Battersby & Co. 62
Sherwin-Williams Co. 17
Sims Pump Valve Co., Inc. 59
Socony-Vacuum Oil Co., Inc. ..... Inside Front Cover
Sperry Gyroscope Co., Div'n of the Sperry Corp. 5
Standard Distributing Co. 57
Standard Oil Co. of Calif. 9
Sumco Products, Inc. 8
Swett & Co., George E. 64
Texas Coast Shipyards 54
The Texas Co. ..... Outside Back Cover
Thompson Co., J. Paul 68
Thorpe & Son, Inc., J. T. 66
Todd Shipyards, Corp. (Combustion Equipment Div'n.) 61
Trenko, William D. 63
Tubbs Cordage Co. 66
United Fruit Co. 2
Washington Aluminum Co. 62
Western Asbestos Co. 62
Western Machinery Corp. 67
Westinghouse Electric Corp. ..... 14 & 15
Whittlesey, Inc., H. Newton 68
Wilson, Inc., Thomas C. 47

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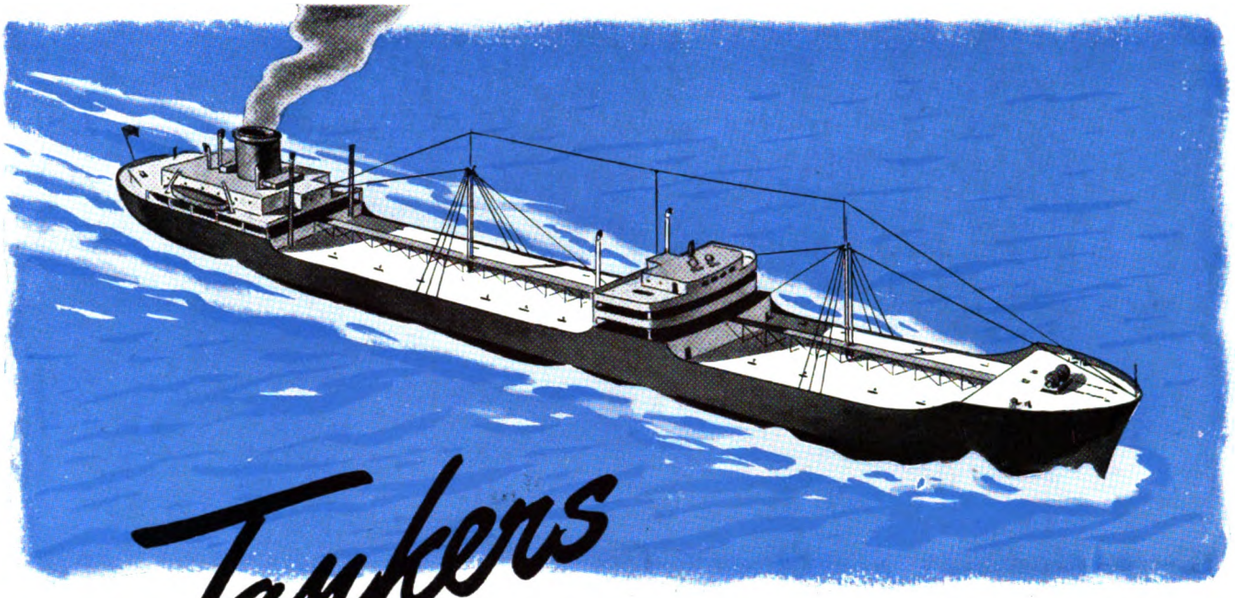

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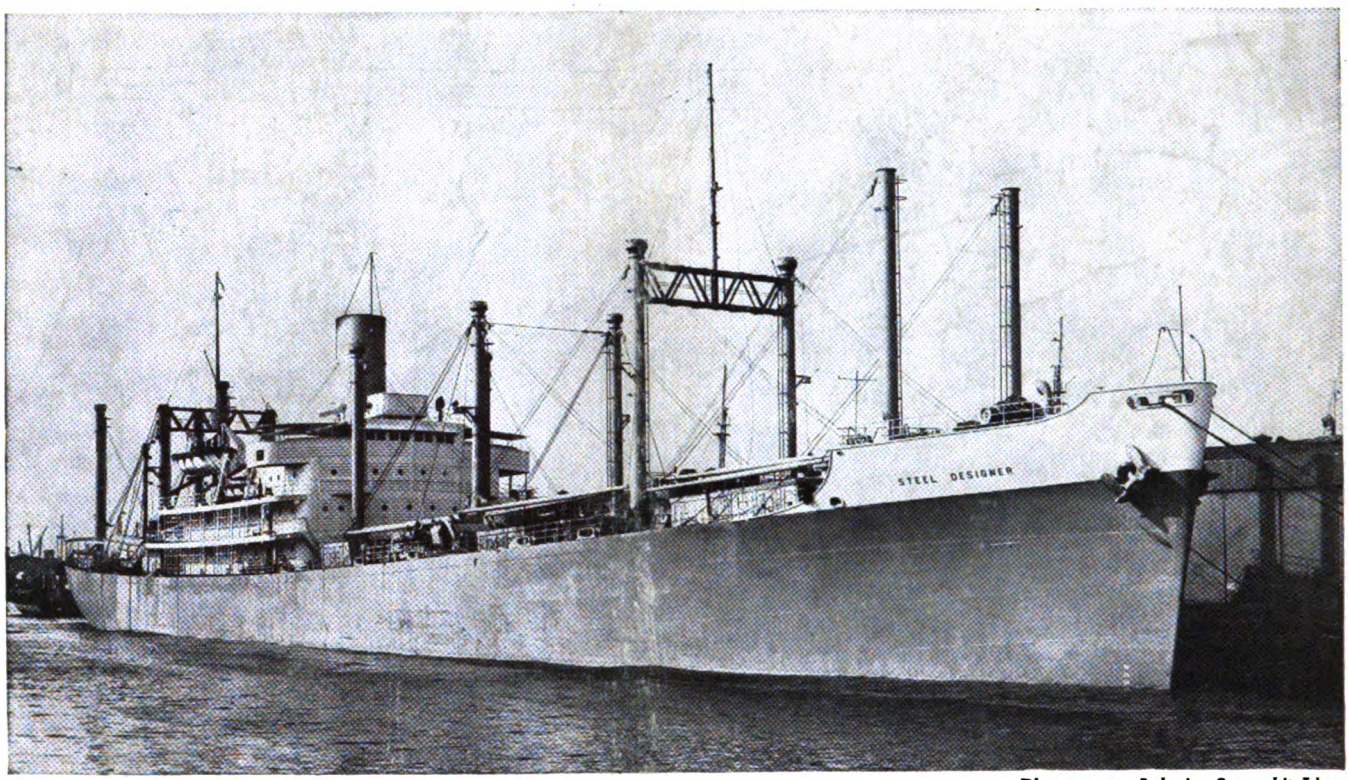

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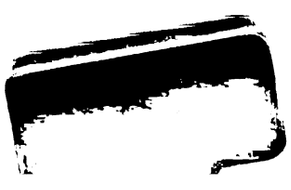

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